CD-ROM Generator

Developer

Reference

Series

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ABOUT THIS MANUAL

This manual explains how to set up the DTL-S2030 CD-ROM Generator system, and how to write source files on CD-R disks (writable compact disks) loaded in the CD recording unit.

The structure of this manual

Chapter 1 Overview

This chapter gives an overview of the CD-ROM Generator and describes the conditions relating to the system, in terms of activating the software.

Chapter 2 Preparation

This chapter gives a step-by-step explanation of the procedures for setting up and testing the CD-ROM Generator system.

Chapter 3 Operations

This chapter gives a detailed explanation of the procedure for generating a CD-ROM disk, including the following four operations.

- Specifying the volume descriptor
- Specifying the directory structure
- Specifying the disk layout
- Writing source files to a CD-R disk

Appendix

The Appendix gives information on the following:
- Messages
- Menu functions

Stipulations regarding operations

The CD-ROM Generator is an application which runs in Windows, and complies with the Windows operating stipulations. This manual assumes that the reader is familiar with Windows and MS-DOS operations, so general Windows-related items are explained in brief only. For more details of Windows, refer to your Windows manuals.

1 OVERVIEW

1.1 Introduction

The CD-ROM Generator, which is an application running in Windows, is a CD-ROM generation tool designed for Playstation disks. It can construct and alter the logical file structure on the CD-ROM. The files can be output on CD-R disk(s) loaded in one or more CD recording units. Debugging disks and master disks can be generated.

The CD-ROM Generator also has the following features.

- **It supports CD recording unit(s)**
  The CD-ROM Generator can control the Sony CDW-900E CD recording unit, so it can write data directly on to the CD-R disk. When used together with CD recording unit(s), it provides a faster and cheaper way to create CD-ROM disks, as long as the number of disks handled at once is not too great. If the CDW-900E is connected to a Windows-based host computer, CD-R disks can be written twice as fast: for example, a 540MB CD-ROM disk can be written in approximately 30 minutes. And, since up to 16 CDW-900E units can be connected, up to 16 disks can be generated at once.
- **It is easy to operate**
  The mouse can be used to create directory structures and to write files to one or more CD-R disks.
- **File location can be selected**
  The location of each file on the CD-ROM can be specified.
- **Data validation**
  The conformity of the data written to the CD-R disk can be validated using the CDW-900E.

1.1.1 File structure format

The format of logical file structures on the CD-ROM conforms to the ISO9660 standard, which is the format to which most CD-ROM disks now conform.

The file structure format for the CD-ROM Generator conforms to the following specifications.

- ISO9660
  Information processing - Volume and file structure of CD-ROM for information interchange (1988-09-01)
- CD-ROM XA
  SYSTEM DESCRIPTION CD-ROM XA
  Copyright May 1991

1.1.2   **System structure**

To use the CD-ROM Generator, you will need the following equipment.

■   An IBM PC/AT or compatible machine

■   An i486SX/25MHz processor, or upwards

■   At least 8MB of memory area

■   A high-capacity hard disk to hold the source files (one CD-ROM disk can hold up to 660MB of data)

■   An AHA-154x (x being any number) Adaptec SCSI host adapter or compatible device

Required software:

■   Microsoft MS-DOS version 5.0 or greater

■   Microsoft Windows 3.1

■   ASPI device driver for the Adaptec SCSI host adapter

■   CD recording unit(s)

■   CDW-900E (up to 16 units, capable of double-speed recording)

The CDW-900E is connected to the computer via SCSI, so at least one unused SCSI bus ID is required.

2 **PREPARATION**

| 2.1 | **Setup**

| 2.1.1 | **Setting up the CD recording unit(s)**

Setting up one or more CD recording units involves the following operations.

- ■ Installing the Adaptec SCSI host adapter
- ■ Installing the device driver for the SCSI host adapter
- ■ Connecting the CD recording unit(s)

| 2.1.2 | **To install the Adaptec SCSI host adapter**

Referring to the manuals provided with the Adaptec SCSI host adapter, install the adapter on the computer you are using. If your computer already has a built-in adapter, you can skip this operation.

| 2.1.3 | **To install the device driver for the SCSI host adapter**

If you have EZ-SCSI (the Adaptec SCSI host adapter installation program), install the device driver as explained in the manual that comes with it.

If you do not have EZ-SCSI, copy the driver to the hard disk and add the device name and pathname to the "CONFIG.SYS" file.

Notes
- ■ No device driver is provided with the CD recording unit.
- ■ If you are using Microsoft's extended memory manager for Windows, be careful not to use the memory area destined for use by the host adapter BIOS.

| 2.1.4 | **To connect the CD recording unit(s)**

Set the DIP switches as instructed in the manual for the CD recording unit you are using, then connect the CD recording unit(s) to the computer.

Note the following points
- ■ If you connect more than one CD recording unit, be sure to use a unique writer ID for each device.
- ■ Set the encoder bit of the CDW-900E directly connected to the SCSI host adapter to ON, and set the encoder bits of the other CDW-900E units to OFF.
- ■ Set the SCSI parity to ON.
- ■ For details, see the installation instructions for the CDW-900E.

Installing the CD-ROM Generator

To carry out the installation operation, you will need the CD-ROM Generator set-up disk for Windows (this disk comes with the CD-ROM Generator).

① Insert the set-up disk into the floppy drive (drive A in this example).

② Activate Windows. For details, refer to your Windows manual.

③ Select "run" from the Program Manager File menu. The "run" dialogue box will appear. (In the following example, it is selected from the Program Manager's file menu.)

Specify filename and execute	
Current directory is C: ù Command line (C):	OK
A: SETUP	Cancel
☐ Execute in [] icon state (M)	Help(H)
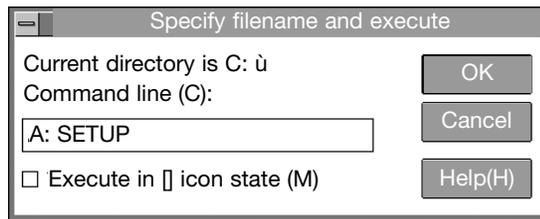
④ Type the following string into the command line box:

  A : S E T U P

⑤ Click the "OK" button. When the message box appears, you will know that the CD-ROM Generator has been initialized. When you have finished the initialization operation, the following box will appear.

CD-ROM Generator Setup

Welcome to the CD-ROM Generator **Setup .**

This program will actually setup CD-ROM Generator **upon your hard disk.**

CD-ROM Generator **requires about 1M Bytes disk space for application program, and working directory space for temporary files during CD-ROM creation.**

[Continue] [Exit] [Help]
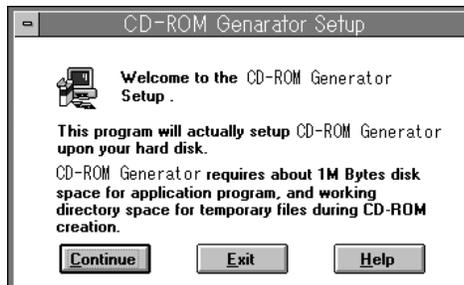
⑥ To continue the operation, click the "Continue" button. The "Set Dest Path" dialogue box will appear.

Set Dest Path for CD-ROM Generator

The setup program will copy CD-ROM Generator **program files into the following directory.**

Path: C:\CDGEN

The setup program will not backup any CD-ROM Generator **files currently existing in the directory. A new program group will also be added to the Program Manager.**

[Continue] [Back] [Exit] [Help]
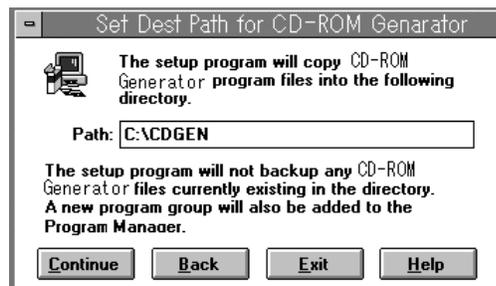
⑦ If necessary, type the new directory into the "Path" box, then click the "Continue" button. (To go back to the previous step, click the "Back" button.) The "Set Working Directory" dialogue box will then appear.

```
┌─────────────────────────────────────────────┐
│ ▢        Set Working Directory               │
├─────────────────────────────────────────────┤
│  ▨   CD-ROM Generator uses following directory│
│      as the working directory for temporary files.│
│                                              │
│  Path:  │C:\CDTMP                        │   │
│                                              │
│      The required amount of the working directory│
│      depends upon number of both directories and│
│      files onto a CD-ROM disc.               │
│                                              │
│        100KByte    approx. 400 Files         │
│        1MByte      approx. 4000 Files        │
│                                              │
│  ┌─────────┐ ┌───────┐ ┌──────┐ ┌──────┐    │
│  │Continue │ │ Back  │ │ Exit │ │ Help │    │
│  └─────────┘ └───────┘ └──────┘ └──────┘    │
└─────────────────────────────────────────────┘
```
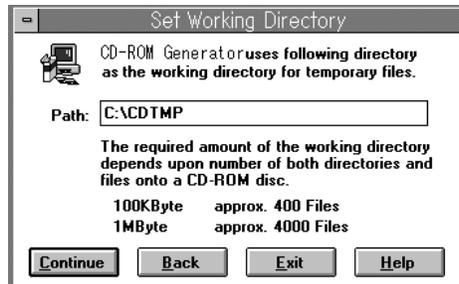
⑧ If necessary, type the new directory into the "Path" box, then click the "Continue" button. The "CREATE" dialogue box will appear, showing that the specified file has been copied to the hard disk. When the copying is finished, the following dialogue box will appear.

```
┌─────────────────────────────────────────────┐
│ ▢   CD-ROM Genarator Setup Exit Message      │
├─────────────────────────────────────────────┤
│                                              │
│   ▨      Setup Succeeded!                     │
│                                              │
│   Be sure to send in the registration information for│
│   your new software.                         │
│                                              │
│              ┌────────┐                       │
│              │  OK    │                       │
│              └────────┘                       │
└─────────────────────────────────────────────┘
```

⑨ Click the "OK" button. The following two icon applications will be shown in the group window for the CD-ROM Generator.

```
┌─────────────────────────────────────────────┐
│ ▢       CD-ROM Genarator          ▼ ▲        │
├─────────────────────────────────────────────┤
│   ◉                ▭▬                        │
│  CD-ROM         Controller                   │
│  Generator                                   │
│                                              │
│                                              │
│                                              │
└─────────────────────────────────────────────┘
```
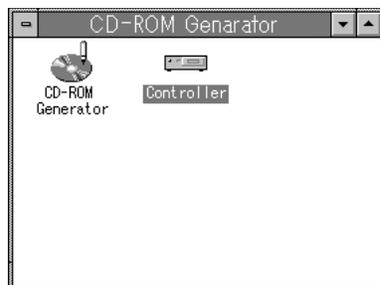
The installation operation is now over. Next, click the "Controller" icon to test the system setup. Refer to the following explanation.

2.3   **T e s t i n g   t h e   S y s t e m   S e t u p**

As soon as you have connected the CD recording unit(s) and installed the CD-ROM Generator program, check that
the system setup is correct by carrying out the five tests listed below.

■ **Connection test**
  This test checks whether the CD recording unit has been connected correctly.
■ **Read test**
  This test checks whether data can be read from the hard disk.
■ **Dummy write test**
  This test checks whether data can be transmitted to the CD recording unit.
■ **Write test**
  This test checks whether data can be written to the CD-R.
■ **Verification test**
  This test checks whether the data was written correctly to the disk in the write test.

If an error is generated in one of the tests, check that the connection and software installation has been carried out
correctly. If this does not solve the problem, contact the Operations Division of Sony Computer Entertainment Inc.,
whose address is given at the back of this manual.
When you are performing the tests, the "CONTROLLER" dialogue box for the next step will appear. Note that when
you carry out the write test, actual data is not required: the necessary data is generated automatically by the system.

① Click the "Controller" icon in the CD-ROM Generator group window. (Alternatively, you could use the File
   Manager and click the "CDREC.EXE" file.) The following dialogue box will appear.
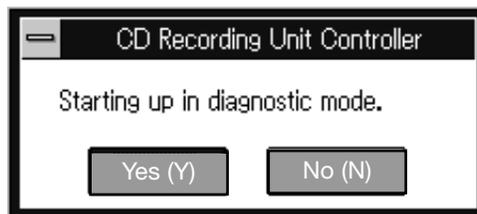
② Click the "Y" (Yes) button. The "CONTROLLER" dialogue box will appear in diagnostic mode (a mode with several more items than the normal mode).

Source data
drop-down menu

CD recording
unit ID box

Diagnostic mode
drop-down menu

Counter/status message area
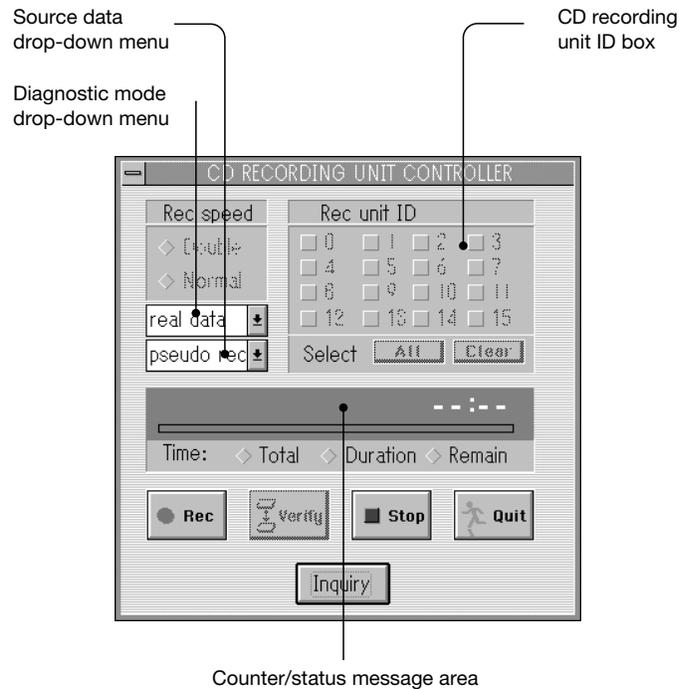
Carry out the tests by specifying options from this dialogue box.

To check the connection:

To check the physical connection, click "Inquiry" button. The "Inquiry" information window will appear, showing the ROM version (both encoder and writer parts) of all the CD recording units connected to the computer. For devices other than CD recording units, only the names of the manufacturer and the model will appear.

If the CD recording units have not been correctly connected, a message will appear.

If the information which appears does not match your actual system structure, refer to the explanation of the CD recording unit installation operation and carry out the connection operation correctly.

To carry out the read test:

① Select "No Rec" from the diagnostic mode drop-down menu.
② From the source data drop-down menu, select the hard disk which is to be tested.
③ Click the "Rec" button. The read test will begin.
④ When the dialogue box appears, click the "OK" button. This dialogue box will show you whether the test has terminated normally or whether an error has occurred.

Notes

■ The test carried out here only confirms whether data can be read from the hard disk: it has nothing to do with whether or not the CD recording unit is connected.

■ The verification test cannot be executed in this mode.

To carry out the dummy write test:
① Select "Pseudo Rec" from the diagnostic mode drop-down menu.

② Select "Auto Data" from the source data drop-down menu.

③ In the CD recording unit ID box, select the number of the CD recording unit to be tested.

④ Load a CD-R disk in the CD recording unit which is to be tested.

⑤ Click the "Rec" button. The dummy write test will begin.

⑥ Confirm that you want to perform the dummy write test. When the dummy write test begins, the test processing status is displayed in the status message area as "Lead in", or "Track", or "Lead out". When the data is transmitted to the CD recording unit, the counter starts counting.

⑦ When the dialogue box appears, click the "OK" button. This dialogue box will tell you whether the test has terminated normally or whether an error has occurred.

Note

In this test, the data is only transmitted to the CD recording unit: it is not actually written to the disk. However, you must be sure to load the disk. During this test, the WRITE lamp on the CD recording unit will light up, and the READ lamp will flash.

If you do not specify the number of the CD recording unit in step 3, data cannot be transmitted from the CD recording unit to the recording processing block. In this case, there is no need to load the disk, and neither the WRITE nor the READ lamp will light up during the test.

To carry out the write test:
① Select "Real Rec" from the diagnostic mode drop-down menu.

② Select "Auto Data" from the source data drop-down menu.

③ In the CD recording unit ID box, select the number of the CD recording unit which is to be tested.

④ Load a CD-R disk in the CD recording unit which is to be tested.

⑤ Click the "Rec" button. The write test will begin, using test data generated automatically.

⑥ Check the progress status of the write operation. When the write test begins, the state of progress will be indicated in the status message area as either "Lead in", or "Rec", "Lead out". When the data is transmitted to the CD recording unit, the counter will start counting. While the write operation is in progress, the WRITE lamp on the CD recording unit will light up.

⑦ When the dialogue box is displayed, click the "OK" button. This dialogue box will tell you whether the test has terminated normally, or whether an error has occurred.

To carry out the verification test:
To carry out the verification test on the CDW-900E which is directly connected to the SCSI host adapter (using the disk to which data was written in the write test), perform the following operations.
①   Select "Auto Data"from the source data drop-down menu.

② On the CD recording unit ID box, select the CD recording unit which is directly connected to the SCSI host adapter.

③ Load the disk (the one to which the data was written in the actual write test) in the CD recording unit selected in step 2.

④   Click the "Verify" button.

⑤ When the confirmation dialogue box appears, click the "OK" button.

⑥ Check that, when the verification test begins, the counter starts counting, and the READ lamp on the CD recording unit lights up.

⑦ When the dialogue box appears, click the "OK" button. This dialogue box will tell you whether the test has terminated normally or whether an error has occurred.

3 **OPERATIONS**

3.1   **Getting Started**

3.1.1   **Generating a CD-ROM disk**

Before generating a CD-ROM disk, you must prepare the original data files on your computer. In this manual, the data files recorded on the CD-ROM disk are called the "source files". The information indicating how the CD-ROM volume descriptor, the directory structure, and the source files are to be recorded is called the "format information". Before the disk write operation is carried out, the format information is converted into a temporary file known as the "format data file". This file contains file allocation information, source files (such as volume descriptors, path tables and the files in the directories) as well as the files needed to generate the disk. This section gives an overview of the procedure for generating a CD-ROM disk.

3.1.2   **The procedure for generating a CD-ROM disk**

A CD-ROM disk is generated by carrying out the following operations.
① Preparing the source file
② Activating the CD-ROM Generator
③ Editing the format information
④ Writing the source files and the format data file to the CD disk loaded in the CD recording unit

3.1.3   **About the source files**

Accessing source files

The CD recording unit records in real time, so the computer needs to output the converted data to the CD recording unit at the transmission speed of the CD. When double-speed writing is executed on the CDW-900E, data has to be transmitted at twice the normal speed. Accordingly, the source files have to be readable at high speed, and they must all be in file systems on the hard disk. If the source files are stored in a network file system connected to the computer, it may not be possible to write them to the CD. Care is also needed when carrying out other tasks in parallel, as disk access from these tasks may delay output to the CD recording unit.

If the individual source files are too small, or if there is too much fragmentation, it may not be possible to achieve sufficient data transfer speed, and this may make it impossible to write the source files to the CD-R disk. Note that, if this is a high possibility, a warning message will appear when you are editing the format information. If such a message appears, save the information in the form of a format file with a disk image, then output it to the CD recording unit. For details, see "Saving the information as a disk image" on Page 44.

The names of the source files

The names of the source files are used without modification on the CD-ROM disk. The characters and numbers which can be used in filenames on the CD-ROM disk are listed below. Please use these characters when naming files.

■   Upper case letters from A to Z
■   Numbers from 1 to 9
■   "_" (underscore)

Filename format

The names of files on disks for the PlayStation should usually be given in the following format.

```
name.ext;1
```

A filename on the disk consists of the name of the file ("name"), a separator ("."), an extension ("ext"), another separator (";") and "1" (this number is usually appended to the filename automatically). Always specify the filename with the extension.

Extensions are not used in the names of directories.

Filename length

Filenames can be up to 8 characters long, and extensions can be up to 3 characters long.

Source file directory structure

If the source file directory structure is the same as the directory structure you want to create on the CD-ROM disk, you can simply copy it to the CD-ROM disk. Even if the source files are arranged in a directory tree with many levels, the directory structure can be generated easily on the CD-ROM disk.

Standard source files

A standard source file is a file in which the size of the data in the logical block is the same as the length of the logical block. CD-DA (digital audio) files and PlayStation real-time files (streaming data files and so on) are excluded from this category: the amount of data which is actually recorded in such files is different from the file size on the CD-R disk. In a standard source file, the unmodified data is divided up into units the size of logical blocks and recorded as Mode 2 Form 1 sectors. In this case, the subheader is added by the CD-ROM Generator and the EDC and ECC (error detection code and error correction code) are generated by the CD recording unit.

Subheader source files

A real-time file on a PlayStation disk needs subheader information, which indicates which data is to be recorded on each sector.

When you specify this subheader information, you should prepare a source file with a data structure in which 2,336 bytes are allocated to each sector of the subheader. In other words, the data structure must conform to the structure of a CD-ROM Mode 2 sector of Form 1 or Form 2. The structures of Form 1 and Form 2 sectors are shown below.

Form 1 Sector structure

Subheader	Data field	EDC	ECC
8bytes	2,048 bytes	4 bytes	276 bytes

Form 2 Sector structure

Subheader	Data field	Reserved
8bytes	2,324 bytes	4 bytes

The contents of the subheader should be written to the source file beforehand. However, the file number will be overwritten, so this value will not be the same as in the source file. The subheader of the last sector of the file must always hold the EOF bit. The reserved area of the Form 2 sector will have NULL data written into it. If it is evident from the subheader contents that the sector conforms to Form 1, the EDC and ECC will be automatically generated in this sector, so you should enter NULL data into the EDC and ECC fields of the source file.

CD-DA source files

Byte0	Byte1	Byte2	Byte3	...	Byte 3251
LLSB	LMSB	RLSB	RMSB	...	RMSB

In the case of a CD-DA source file, you must give the source file a data structure in which 2,352 bytes are allocated to each sector. The 16 bits of sampled data (the top byte and the bottom byte) will be arranged as shown below, with the left channel (L) coming before the right channel (R).

".WAV" files (16-bit PCM/44.1kHz) can also be used as CD-DA source files.

3.2 Activating and Terminating the CD-ROM Generator

As well as explaining how to activate and terminate the CD-ROM Generator, this section gives a brief explanation of each part of the window.

3.2.1 Activating the CD-ROM Generator

To activate the CD-ROM Generator, carry out the following operations.
① Activate the system and Windows.
② Click the CD-ROM Generator icon on the CD-ROM Generator group window. (Alternatively, use the File Manager and click the file "CDGEN.EXE".) The CD-ROM Generator window will then appear.

Changing the editing mode
The following three editing modes are available on the CD-ROM Generator.
■ Volume mode
■ Directory mode
■ Layout mode

When you activate the CD-ROM Generator, you will enter Volume mode, which is the default mode. However, you can easily change the mode. The diagram on the previous page shows the window in Volume mode.

Errors
If a format error occurs while you are editing the format information, the error/warning message window will appear, and the appropriate error/warning message will be output. For details of error messages and warning messages, see "Format information error messages" on Page 51, and "Format information warning messages" on Page 52.

The name and function of each part of the window

The design of each of the CD-ROM Generator windows conforms to the stipulations for Microsoft Windows. The following diagram gives a brief explanation for each part of the Volume mode window. For more details, consult your Windows manual.

① **Control Menu box**

This box can be used to change the size and location of the window. By double-clicking it, you can close the current window.

② **Menu bar**

This is used to display menus for editing files, fields and so on.

③ **Iconify button**

Mode selection window

Disk recording time

Time remaining

Rec panel button

Editing panel
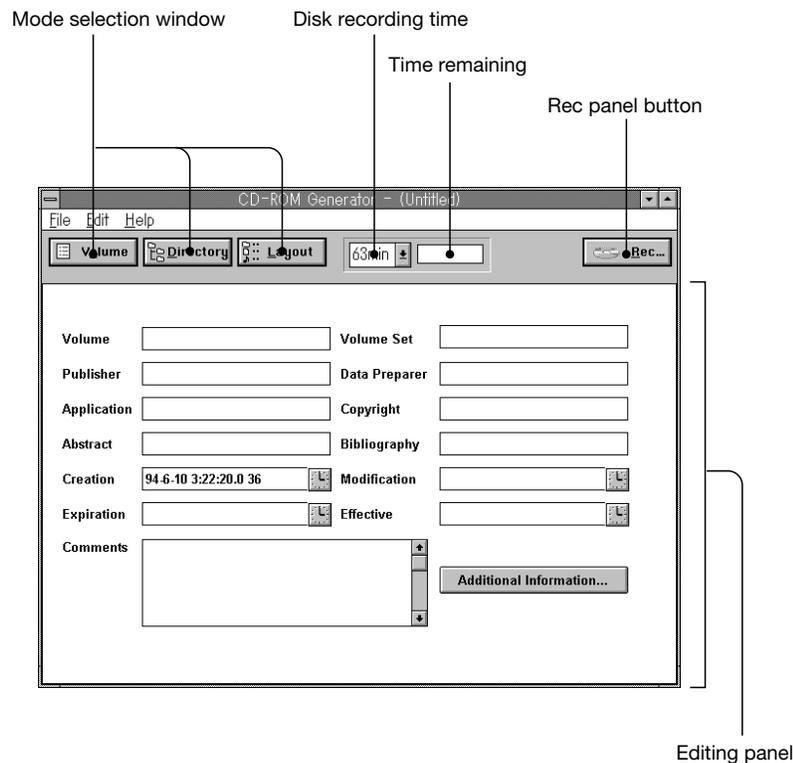
When you click this button, the window shrinks and the CD-ROM Generator application icon appears.

If you double-click the application icon, it turns back into a window.

④ **Maximize button**

By clicking this button you can enlarge the window until it takes up the whole of the screen.

⑤ **Clock button**

If you click this button, a dialogue box appears, allowing you to specify the time and the date.

⑥ **Vertical and horizontal scroll bars**

These are used to display information not currently displayed.

⑦ **Mouse pointer**

When you move the mouse, the mouse pointer moves accordingly on the screen. You can select an item by moving the mouse pointer on to that item and then clicking the mouse button.

⑧ **Input marker**

The position of the input marker is the position at which you can now input text.

Control menu box

Maximize button

Menu bar

Iconify button

Clock button

Vertical and
horizontal
scroll bars

Mouse pointer
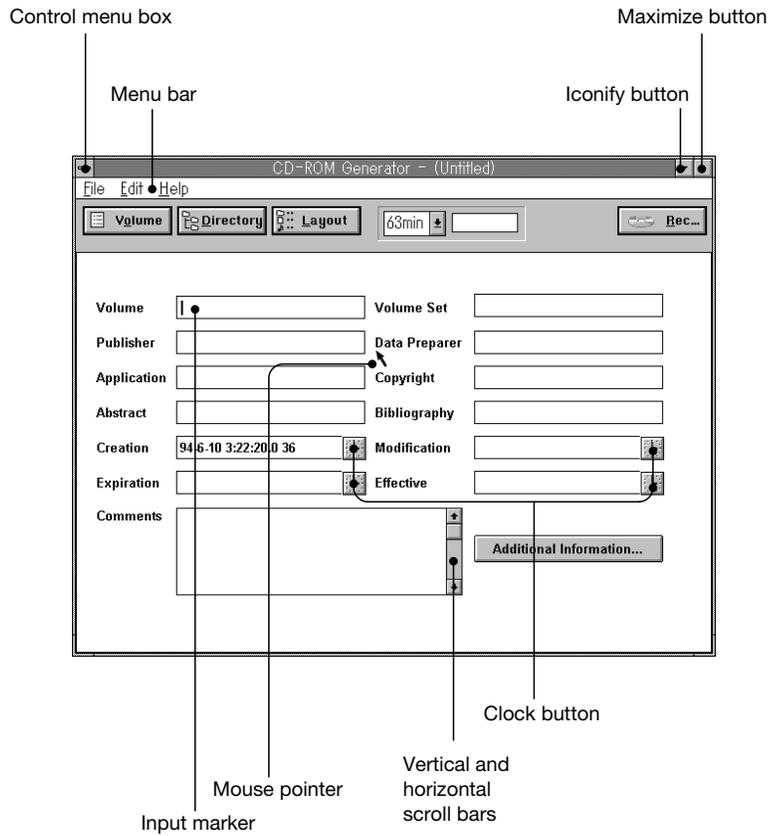
Input marker

Using the mouse and the keyboard

For details, consult your Microsoft Windows manual.

<u>Using text boxes</u>

■ *How to input text*

To input text in a text box, move the mouse pointer on to the text box and click the mouse button. The input marker will appear in the text box. If you type in letters from the keyboard, the letters will be input from the location of the input marker, and the input marker will move, staying one character ahead of the last character input. While the input marker is displayed in a text box, all input from the keyboard will be displayed at the location of the input marker.

■ *How to copy text to the clip-board (temporary storage area)*

Move the mouse pointer to the beginning of the block of text you want to copy to the clip-board. While pressing the mouse button, drag the mouse until all of the desired block of text is highlighted. Next, select "Copy" from the Edit menu.

■ *How to paste text from the clip-board*

Move the input marker to the position at which you want to paste in the text from the clip-board, then select "Paste" from the Edit menu.

■ *How to delete text*

Following the same method used to copy text to the clip-board, select the block of text you want to delete, then select "Cut" from the Edit menu. The highlighted block of text will be copied to the clip-board and will disappear from the text box. Text can also be deleted by pressing the Backspace key or by selecting "Delete" from the Edit menu, but if either of these methods is used, the text will not be copied to the clip-board.

3.2.2   **Terminating the CD-ROM Generator**

To terminate the CD-ROM Generator, carry out the following operations.

① Double-click the Control Menu box, or alternatively, select "Exit" (Alt + F4) from the File Menu.
If you do not save the current file information after editing it, the "File Changed" dialogue box will appear.
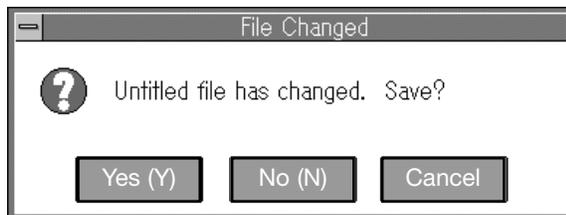
② If you want to save the changes you have just made, click the "Yes" (Y) button, and if not, click the "No" (N) button. If you decide not to terminate the CD-ROM Generator after all, click the "Cancel" button.

If you click the "Yes" (Y) button, and the format information does not have a name (i.e. if no name has been registered yet), the "File Save As" dialogue will appear and attempt to elicit a filename. (For details, see "Saving edited format information as a file" on Page 43.) If a name has already been specified for the format information, the format information will be saved and no dialogue box will appear.
When the file has been saved, the CD-ROM Generator program terminates.

Specifying the Disk Recording Time

The following three types of CD-R disks - each with a different recording time - can be used on the CD-ROM Generator.

Recording time	Data capacity
18 minutes	Approx. 160 megabytes
63 minutes	Approx. 540 megabytes
74minutes	Approx. 660 megabytes

On the disk recording time drop-down menu, specify the type of CD-R disk. The time remaining on the selected disk will be displayed on the right side of this box.

Specifying the Volume Descriptor

In Volume mode, you can specify the contents of the volume descriptor containing the volume information for the CD-ROM disk.

If you click the "Volume" button, Volume mode will be selected, as shown below.

In Volume mode, the following items are displayed.
- Volume identifier
- Volume Set identifier
- Publisher identifier
- Data preparer identifier
- Application identifier
- Copyright identifier
- Abstract identifier
- Bibliography identifier

- ■ Creation (volume creation date)
- ■ Modification (volume modification date)
- ■ Expiration (volume expiration date)
- ■ Effective (volume effective date)
- ■ Comments
- ■ Additional information

When inputting the information, use the following two character sets given in ISO-9660, in accordance with the item in question.

- ■ "d" character set A to Z and 0 to 9
- ■ "a" character set A to Z and 0 to 9

Space ! " % & ' ( ) * , - . / : ; < = > ? _

Information items for which no data is input are treated as "unspecified".

3.4.1   Volume identifier

In the "Volume" text box, type in the name of the volume to be generated on the CD-ROM disk. For a PlayStation disk, input a disk name which indicates the title of the software. The volume name should be given in characters from the "d" character set, and should be no more than 32 characters long.

3.4.2   Volume Set identifier

In the "Volume Set" text box, insert the name of the volume set to which the volume belongs. The CD-ROM Generator cannot handle several volumes as a volume set, so only one volume can be specified for any given volume set. The volume set name should be given in "d" set characters and should be no more than 128 characters long (for PlayStation disks, a volume set is usually not used).

3.4.3   Publisher identifier

In the "Publisher" text box, insert the name of the software publishing company or the name of the producer.

If the first character is "_" (underscore), the subsequent characters are treated as the name of the file containing the publisher information. This file must be in the root directory of the CD-ROM disk. The publisher name should be given in "a" character set characters and should be no more than 128 characters long.

3.4.4   Data Preparer identifier

In the "Data Preparer" text box, specify the name of the author of the software, or the copyright holder.

If the first character is "_" (underscore), the subsequent characters are treated as the name of the file containing the information relating to the data preparer. This file must be in the root directory of the CD-ROM disk. The data preparer name should be given in "a" character set characters and should be no more than 128 characters long.

3.4.5   **Application identifier**

In the "Application" text box, you should always enter the 11 characters "PLAYSTATION" to indicate that this is a disk for the PlayStation.

3.4.6   **Copyright identifier**

In the "Copyright" text box, specify the name of the file containing the text relating to the copyright of this volume.

This file must be in the root directory of the CD-ROM disk.

3.4.7   **Abstract identifier**

In the "Abstract" text box, specify the name of the file containing an abstract of this volume.

This file must be in the root directory of the CD-ROM disk.

3.4.8   **Bibliography identifier**

In the "Bibliography" text box, specify the name of the file containing the record relating to the contract conditions. The contract conditions record consists of information regarding an interpretation in accordance with the agreement between the volume creator and the receiving party.

3.4.9   **Creation (volume creation date)**

When you click the clock button next to the "Creation" label, the "Creation Date & Time" dialogue box appears.
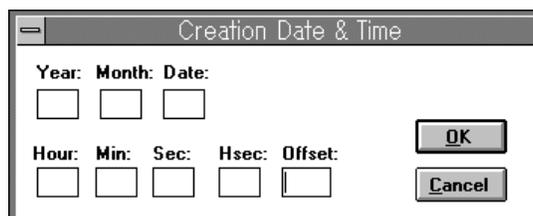
Input the creation date and click the "OK" button.

3.4.10   **M o d i f i c a t i o n   (v o l u m e   m o d i f i c a t i o n   d a t e)**

When you click the clock button next to the "Modification" label, the "Modification Date & Time" dialogue box
appears.
Enter the date on which the modification was carried out, then click the "OK" button.

```
Modification Date & Time

Year:  Month:  Date:
[  ]    [  ]    [  ]
                                          [  OK  ]
Hour:  Min:  Sec:  Hsec:  Offset:
[  ]   [  ]  [  ]  [  ]   [  ]            [ Cancel ]
```

3.4.11   **E x p i r a t i o n   (v o l u m e   e x p i r a t i o n   d a t e)**

When you click the clock button next to the "Expiration" label, the "Expiration Date & Time" dialogue box appears.
Enter the date on which the volume expires, then click the "OK" button.

```
Expiration Date & Time

Year:  Month:  Date:
[  ]    [  ]    [  ]
                                          [  OK  ]
Hour:  Min:  Sec:  Hsec:  Offset:
[  ]   [  ]  [  ]  [  ]   [  ]            [ Cancel ]
```

3.4.12   **E f f e c t i v e   (v o l u m e   e f f e c t i v e   d a t e)**
When you click the clock button next to the "Effective" label, the "Effective Date & Time" dialogue box appears.
Enter the date on which the volume becomes effective, then click the "OK" button.

```
Effective Date & Time

Year:  Month:  Date:
[  ]    [  ]    [  ]
                                          [  OK  ]
Hour:  Min:  Sec:  Hsec:  Offset:
[  ]   [  ]  [  ]  [  ]   [  ]            [ Cancel ]
```

3.4.13 **C o m m e n t s**

In the "Comments" text box, you can enter detailed information on the CD-ROM disk you are generating. However, this information will not be written to the CD-R disk.

3.4.14 **A d d i t i o n a l   i n f o r m a t i o n**

When you click the "Additional Information" button, the "Additional Information" dialogue box appears.

```
┌──────────────────────────────────────────────────────┐
│ ▭            Additional Information                    │
├──────────────────────────────────────────────────────┤
│  System Identifier:    [                    ]          │
│                                              ┌────────┐│
│  System Area File:     [                    ]│   OK   ││
│                                              └────────┘│
│  Volume Descriptor File: [                  ]┌────────┐│
│                                              │ Cancel ││
│                                              └────────┘│
└──────────────────────────────────────────────────────┘
```
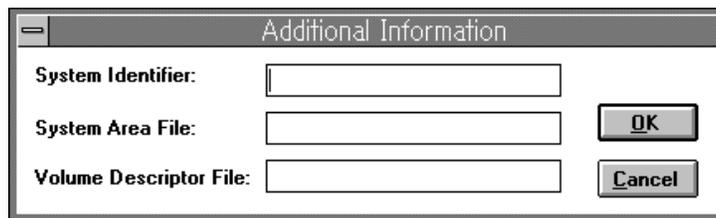
- *System Identifier*
  In the "System Identifier" text box, input the identifier of the system which checks the contents of the system area (logical sectors 0 to 15) and executes commands in accordance with these contents. The system identifier should be specified in characters from the "a" character set and should be no more than 32 characters long.

- *System Area File*
  In the "System Area File" text box, input the name of the source file which has to be recorded in the system area (logical sectors 0 to 15). If the source file is not contained in the system area, the remaining data will be stored in logical sectors 16 and onwards.

  However, it will not then be stored in the logical sectors reserved for the volume descriptor. Create a system file with the same sector structure as the track mode. In other words, on a disk for the PlayStation, you must create a system file with a sector length of 2336 bytes, using "Mode 2 Form 1/ Form 2".

- *Volume Descriptor File*
  The CD-ROM Generator creates both the primary volume descriptor and the terminal volume descriptor. If you want to add a different volume descriptor, you can use a volume descriptor file in which 1 sector holds 2048 bytes. This data is positioned with logical sector 16 at the top, and the contents of the application specification area of the first volume descriptor created by the CD-ROM Generator are overwritten on this. The data in the other sectors is allocated after the volume descriptor. You should also note that the volume descriptor must comply with ISO-9660. The terminal volume descriptor is always added after the last sector of the volume descriptor file.

Specifying the Directory Structure

You must specify how the location of the source files on the hard disk are to be changed before being recorded on the CD-R disk.

Clicking the "Directory" button takes you into Directory mode, in which the screen looks like the illustration below. You will then be able to define the directories and files to be used when writing the source files to the CD-R disk.
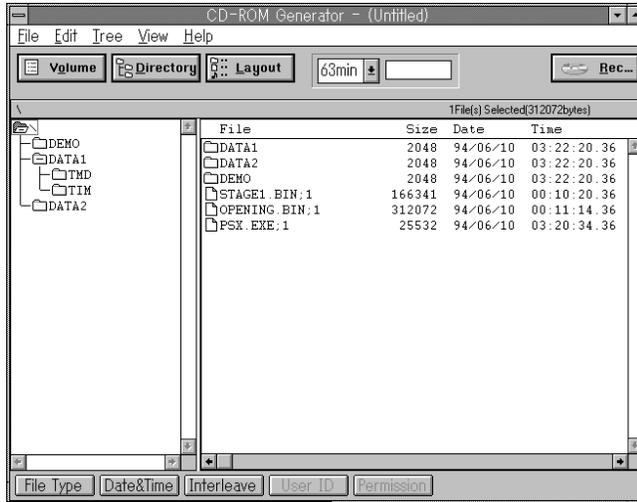
This screen works like the File Manager.

The Directory window is made up of the following 2 windows.

■ The directory tree window on the left displays the directory tree, starting from the root directory at the top left.

■ The contents list window on the right displays the files and sub directories in the current directory. It also shows the file type icon, filename, file size, date, mode and format, interface function, user ID, permissions and source path for each file.

The file type icons displayed are as follows.

    : directory

    : standard file

    : subheader file

    : CD-DA source file

3.5.1 **S e l e c t i n g   f i l e s   a n d   d i r e c t o r i e s**

■ *To select a single file or directory:*
Click the name of the desired file or directory in the directory tree or in the contents list.

■ *To select several files or directories en bloc:*

① Click the first of the desired files or directories.
② While pressing the SHIFT key, click the last of the desired files or directories.

■ *To select several files or directories regardless of the order in which they are displayed:*
While pressing the CTRL key, click each file or directory.

■ *To select all the files and sub directories in the current directory:*
Select "Select all" from the Edit menu.

3.5.2 **C o p y i n g   f i l e s   a n d   d i r e c t o r i e s**

To copy a source file on the hard disk to a directory on the CD-ROM Generator, carry out the following operations.

Note
The actual copy operation does not start until you click the "Rec" button on the "CONTROLLER" dialogue box. For details, see "Writing to the CD-R disk" on Page 41.

■ *Using the mouse:*
Drag the marked file or directory from the window on the left side of the file manager to the desired directory in the directory tree window.
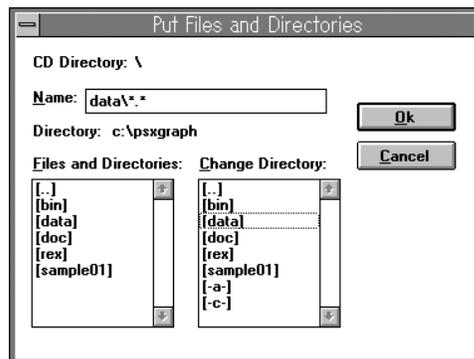
■ *Using the menu:*

① Select the intended CD-ROM directory from the directory window.
② Select "Put Files and Directories" from the Edit menu. The "Put Files and Directories" dialogue box will appear.
③ Select the desired source file or directory. (If you select a directory, all the files and sub directories it contains will be copied to the CD-ROM directory.)
④ Click the "OK" button.

3.5.3 **Creating a directory**

① Select "Create Directory" from the Edit menu. The "Create Directory" dialogue box will appear.

② Enter the path for the new directory in the "Directory Name" box. Be sure to obey the CD-ROM directory name restrictions. Do not give the directory name an extension.
③ Click the "OK" button.

3.5.4 **Moving files and directories**

■ *Using the mouse:*
Select the file or directory you want to move, and drag it to the directory which is your intended destination.

■ *Using the menu:*
① Select the file or directory you want to move.
② Select "Move" from the Edit menu. The "Move To" dialogue box will appear.
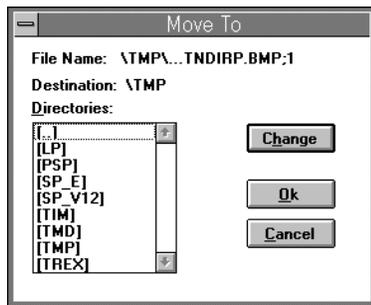
③ Select the intended destination directory from menu. To display a directory which is not currently shown in the window, either double-click the directory name on the menu, or click the "Change" button.
④ Click the "OK" button.

Notes
■ When you select a directory, all the files and sub directories it contains will be moved.
■ You cannot move a directory to its own sub directory or move a sub directory to its parent directory.

| 3.5.5 | **Deleting files and directories** |

■ *Using the keyboard:*
Select the file or directory you want to delete, and press the DEL key. A confirmation dialogue box will appear. Click the "OK" button.

■ *Using the menu:*
① Select the file or directory you want to delete.
② Select "Delete" from the Edit menu. The "Delete File" dialogue box will appear.

③ Click the "OK" button.

Note
If you select a directory, all the files and sub directories it contains will be deleted.

| 3.5.6 | **Renaming files and directories** |

If a name contains characters which may not be used, or if a name is too long, you must change it.
① Select the file or directory you want to rename.
② Select "Rename" from the Edit menu. The "Rename" dialogue box will appear.
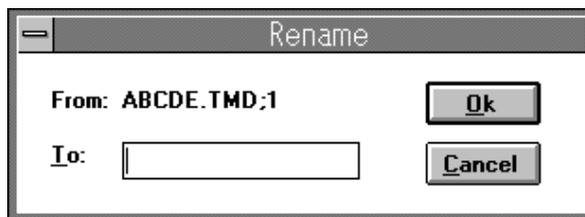
③ Enter the new name.
④ Click the "OK" button.

<table>
<tr><td>3.5.7</td><td>Updating files and directories</td></tr>
</table>

When you click the "Rec" button when you are writing to the CD-R disk, a message will appear if the CD-ROM format information includes any source files not found in the DOS file system, or if there are discrepancies in file size.

If such a message appears, you should update the CD-ROM format information, correcting any contradictions: that is, deleting the names of any non-existent files, and altering the size where necessary.

① Select the directory you want to update.

② Select "Update" from the Edit menu. The "Update Files" checkbox will appear. Select the appropriate update operation.

■ *"Update Date & Time"*
Compare the date and time of the file given in the CD-ROM format information with the date and time of the file in the actual DOS file system, and if they differ, update to the most recent date and time.

■ *"Add New File in Directory"*
Add a DOS file missing from the CD-ROM format information to the CD-ROM format information.

■ *"Include Sub directories"*
Specify whether the two options above are also to be carried out on the sub directories of the current directory.

③ Click the "OK" button.

<table>
<tr><td>3.5.8</td><td>Specifying file attributes</td></tr>
</table>

You can specify the following attributes for the selected file.
■ File type
■ Date
■ Interleave
■ Permissions
■ User ID

Changing the file type

The following three file types can be specified, depending on the CD-ROM format information.
■ Standard file
■ Subheader file
■ CD-DA file

When you click the "File Type" button, the "File Type" dialogue box appears.
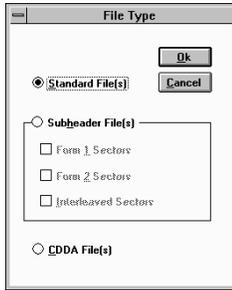
■ *Standard file*

In the case of a standard source file (for details, see "Standard source files" on Page 12), click the "Standard File(s)" radio button.

■ *Subheader file*

In the case of a subheader file (for details, see "Subheader source files" on Page 12), click the "Subheader File(s)" radio button. The attributes shown in the checkbox can be specified. Set the appropriate attributes, in accordance with the contents of the source file.

■ *CD-DA file*

In the case of a CD-DA source file (for details, see "CD-DA source files" on Page 13), click the "CD-DA File(s)" radio button.

To execute the change, click the "OK" button. If you decide not to change the file attributes after all, click the "Cancel" button.

Changing the date and time

By clicking the "Date & Time" button, you can specify the date and time of the file's creation. If you do not specify a date and time, the date and time of the last modification carried out on the source file in the DOS file system is used. For details, see your DOS manual.

When you click the "Date & Time" button, the "Recording Date & Time" dialogue box appears.
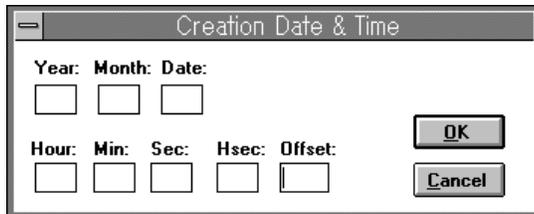
Enter the last two digits of the year, the month, day, hour, minute, second and offset value, then click the "OK" button. The creation time and date will now be changed to the specified time and date.

Specifying interleave mode

By clicking the "Interleave" button, you can store the file in interleave mode (the file data blocks can be stored with gaps between them). This is used mainly for ADPCM audio files (streaming audio for the PlayStation) and other files which need to be stored in interleave mode.

In interleave mode, no sector is needed for the source gap.

Note

A directory will not be interleaved, even if interleave mode is specified. The term "interleaving" is here used to mean interleaving in file units. If you want to carry out channel interleaving of files, you must provide channel interleave source files.

When you click "Interleave", the "Interleave" dialogue box will appear.
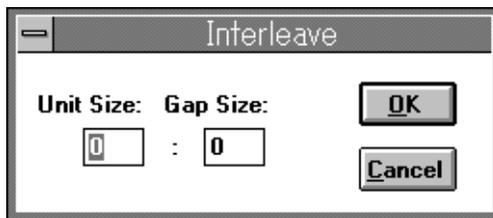
In the "Unit Size" text box, enter the maximum unit size (the number of blocks which can fit in one section), and in the "Gap Size" text box, enter the interleave gap size (the number of blocks between one section and the next). The unit size and the gap size should come to no more than 225 in total.

If you do not want to set the file to interleave mode, enter "0" in the "Unit Size" and "Gap Size" text boxes.

To execute the changes you have just specified, click the "OK" button. If you decide not to change the file attributes after all, click the "Cancel" button.

Setting the permissions

By clicking the "Permission" button, you can specify whether the following three user categories are allowed to execute and read the source file.

■ Owner *owner only*
■ Group *only users belonging to the group*
■ World *any user*

If you do not carry out this setting, any user will be allowed to execute and read the source file.

When you click the "Permission" button, the "Permission" dialogue box will appear.
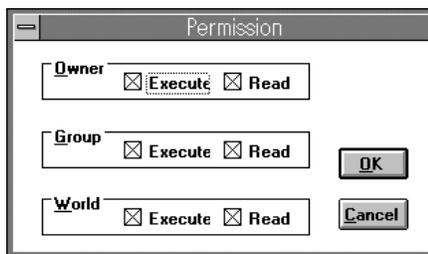
To execute the changes you have just specified, click the "OK" button. If you decide not to change the file attributes after all, click the "Cancel" button.

Specifying the user ID

By clicking the "User ID" button, you can specify the owner ID and group ID for each source file.

Unless you specify them, the file will have no owner ID or user ID. When you click the "User ID" button, the "Owner & Group ID" dialogue box will appear.
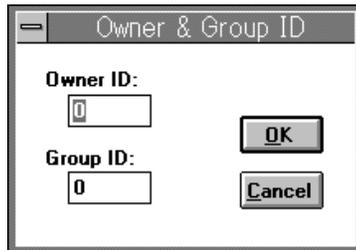
To execute the changes you have just specified, click the "OK" button. If you decide not to change the file attributes after all, click the "Cancel" button.

3.5.9   **C h a n g i n g   t h e   d i r e c t o r y   d i s p l a y**

To expand the directory by one level:

On the directory tree, select the directory you want to change, then select "Expand One Level" from the Tree menu. The next directory level will then be displayed.

To display the whole directory:

On the directory tree, select the directory you want to display, then select "Expand Branch" from the Tree menu. All the sub directories in the selected directory will then be displayed.

To display the whole directory tree:

Select "Expand All" from the Tree menu. The whole directory will then be displayed.

To delete a directory:

On the directory tree, select the directory you want to delete, then select "Collapse Branch" from the Tree menu. The sub directories of the selected directory will disappear.

Changing the contents list window

To display all the file information:

Select "All File Details" from the View menu.

To display part of the file information:

Select "Partial File Details" from the View menu. When the "Partial Details" checkbox appears, select the item you want to display.
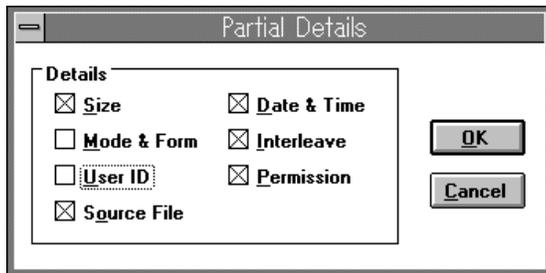
When you have selected the item, click the "OK" button. The selected item of information about the file will then be displayed on its own.

Specifying the Disk Layout

In Layout mode, you can arrange the files which are not displayed in the directory structure, such as non-formatted source files. In this mode, you can also create tracks and change the location of files on the track. By clicking the "Layout" button, you can select Layout mode, in which the screen looks like this:
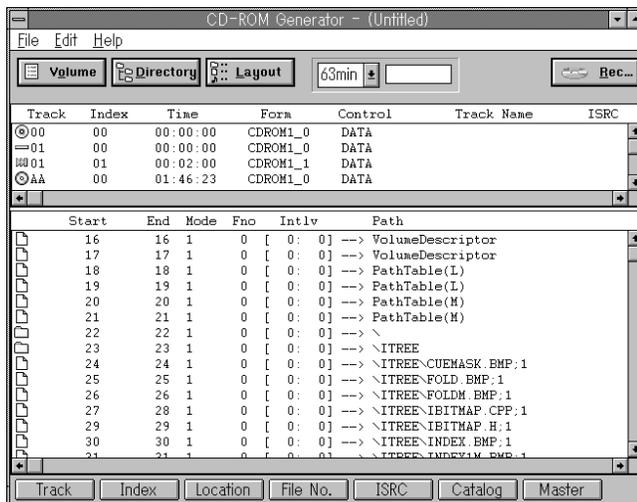
The Layout mode screen is made up of the following two windows.

■ The track window at the top displays track and index information.

■ The location window at the bottom displays the location information file for the track selected on the track window.

The icons displayed in the track window are as follows:

⊙   : lead-in

▭   : pause

▷▷| : track

⟋   : index

⊙   : lead-out

Using the following command buttons at the bottom of the window, you can edit the information displayed in the window (see pages 34-40).

    - Track

    - Index

    - Location

    - File No.

    - ISRC

    - Catalogue

    - Master

Heading missing

The track window displays information showing how the data is recorded on the CD-R disk. This information is used to create the TOC (table of contents) and index for the CD-ROM disk. Each line on the track window contains the following items:

Track Index Time Form Control Trackname ISRC

Track

This is the track number on the CD-ROM disk. The CD player only displays the track numbers from 01 to 99, but the track window also displays the tracks 00 and AA. 00 stands for the lead-in area on the disk, and AA stands for the lead-out area on the disk. The lead-in area indicates the inside of the track, and the lead-out area indicates the outside.

Index

This is the index number on the CD-ROM disk. The index "00" indicates a pause.

Time

This is an absolute time indicating a specific location on the CD-ROM disk. It is expressed in minutes, seconds and frames, in that order. A frame is 1/75th of a second. The time displayed for Track number AA is the total time on the disk. The value usually displayed is 00:00:00.

Form

This is the track mode for the CD-ROM disk. It can be either CDROM1, CDROM2 or CDDA. The number (for example "_0") which follows the track mode code is not important for your purposes, so you do not need to check it.

■   CDROM1   *Mode 1 data track*

■   CDROM2   *Mode 2 Form 1/Form 2 data track*

■   CDDA   *Audio track*

Control

This is the type of information recorded on the track.

- ■ 2CHAN   2-channel audio track without play impulse
- ■ DATA   Audio track

Trackname

A track name is displayed if specified, but it is not recorded on the CD-ROM disk.

ISRC

This is the international standard recording code for the track.

A catalogue number will be displayed after this, if specified.

In addition to this, master disk information is displayed, consisting of the disk name, the producer's name, the copyright holder's name, and the creation date. An example is shown below.

Disc Name:	Sample
Producer Name:	T.I. Company
Copyright Holder Name:	Pearl Co.
Creation Date:	930713

The location window display

The location window displays the location of each file, as shown below.

```
  Start    End  Mode  Fno   Intlv        Path
     16     16   1      0  [  0:   0] --> VolumeDescriptor
     17     17   1      0  [  0:   0] --> VolumeDescriptor
     18     18   1      0  [  0:   0] --> PathTable(L)
     19     19   1      0  [  0:   0] --> PathTable(L)
     20     20   1      0  [  0:   0] --> PathTable(M)
     21     21   1      0  [  0:   0] --> PathTable(M)
     22     22   1      0  [  0:   0] --> \
     23     23   1      0  [  0:   0] --> \ITREE
     24     24   1      0  [  0:   0] --> \ITREE\CUEMASK.BMP;1
     25     25   1      0  [  0:   0] --> \ITREE\FOLD.BMP;1
     26     26   1      0  [  0:   0] --> \ITREE\FOLDM.BMP;1
     27     28   1      0  [  0:   0] --> \ITREE\IBITMAP.CPP;1
     29     29   1      0  [  0:   0] --> \ITREE\IBITMAP.H;1
     30     30   1      0  [  0:   0] --> \ITREE\INDEX.BMP;1
```

Each line consists of the following information.

START END MODE FNO [UNIT:GAP] -> PATH

START	logical block number of head of file
END	logical block number of end of file
MODE	recording mode
FNO	file number used in CD-ROM XA and CD-I format
UNIT:GAP	file unit size and interleave gap size
PATH	path on CD-ROM disk

In Layout mode, the path displayed for an added file is not the directory level on the CD-ROM disk but the whole path of the source file on the hard disk.

3.6.1 **Displaying the file for a track**

When you select a track in the track window, the file belonging to the selected track is displayed in the location window.

3.6.2 **Copying a file to a track**

Note

The actual copying operation does not begin until you click the "Rec" button in the "CONTROLLER" dialogue box. For details, see "Writing to the CD-R disk" on Page 41.

■ **Using the mouse:**

Select a file from the window to the left of the File Manager, and drag it to the desired track.

■ **Using the menu:**

① Select the desired destination track from the track window.

② Select "Put Files" from the Edit menu. The "Put Files" dialogue box will appear.

③ Select the file or directory you want to copy.

```
┌─────────────────────────────────────────────────┐
│ ▬                    Put Files                    │
├─────────────────────────────────────────────────┤
│  Track No: │1│     Logical Block Number: │30│     │
│                                                   │
│  Name: │                              │           │
│                                      ┌──────────┐ │
│  Directory:  c:\...\src\cdcreate\mkcd_fe │   Ok    │ │
│                                      └──────────┘ │
│  Files and Directories:  Change Directory:        │
│  ┌───────────────┐    ┌──────────────┐ ┌────────┐ │
│  │111.bmp      ▲│    │[..]        ▲│ │ Cancel │ │
│  │aaa.bmp      ▒│    │[-a-]        ▒│ └────────┘ │
│  │apple.obj    ▒│    │[-c-]        ▒│            │
│  │bad2.cur     ▒│    │            ▒│            │
│  │badarea.cur  ▒│    │            ▒│            │
│  │bstr.obj     ▒│    │            ▒│            │
│  │btndir.bmp   ▒│    │            ▒│            │
│  │btndirp.bmp  ▒│    │            ▒│            │
│  │btnlay.bmp   ▼│    │            ▼│            │
│  └───────────────┘    └──────────────┘            │
└─────────────────────────────────────────────────┘
```
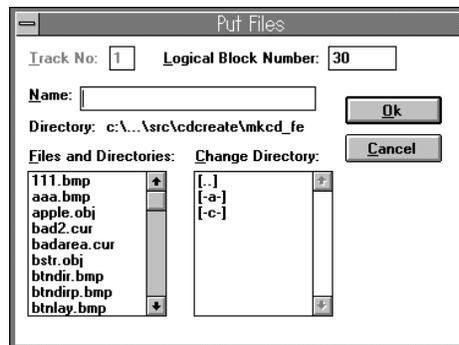
④ Click the "OK" button.

Notes

■ If you select a directory, all the files and sub directories it contains will be copied. Also, because the file you want to copy is not in the CD-ROM directory, it will not appear in Directory mode.

■ The selected file will be copied to the position after the last file or the last directory. If you want to copy it to somewhere else, see over page.

3.6.3   **Copying a file to a specific location on a track**

You can copy the file to the position after a specific file or directory.

Note

The actual copy operation does not begin until you click the "Rec" button in the "CONTROLLER" dialogue box. For details, see "Writing to the CD-R disk" on Page 41.

■ **Using the mouse:**
Select the desired file or directory from the window at the right of the File Manager, then drag it to the location of the desired file or directory.

■ **Using the menu:**
① Select the desired destination file or directory from the location window.
② Select "Put Files" from the Edit menu. The "Put Files" dialogue box will appear.
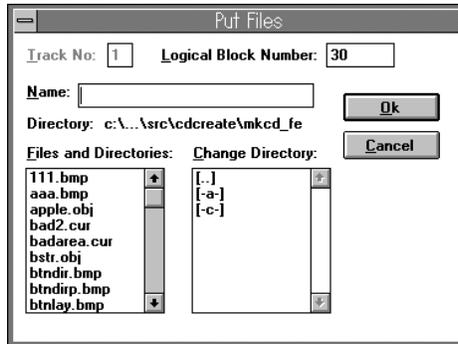
③ Select the file or directory you want to copy.
④ Click the "OK" button.

Note

If you select a directory, all the files and sub directories it contains will be copied. Also, because the copied file is not in the CD-ROM directory, it will not appear in Directory mode.

3.6.4   **Changing the order of the tracks**

■ **Using the mouse:**
From the track window, select the track you want to move. Drag the selected track to the desired location in the track window.

■ **Using the menu:**
① Select the desired track from the track window.
② Select "Move" from the Edit menu. The "Move To" dialogue box will appear.
③ Enter the new track number of the desired destination track.
④ Click the "OK" button.
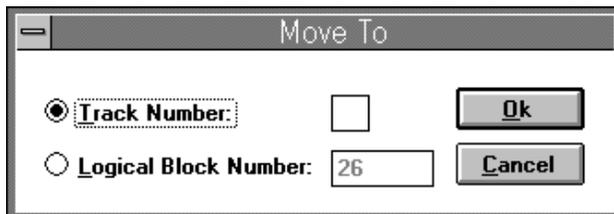
3.6.5 **Changing the location of several files at once**

■ Using the mouse:
From the location window, select the file or directory you want to move. Drag the selected file or directory to the desired destination on the location window

■ Using the menu:
① From the track window, select the track you want to move.
② Select "Move" from the Edit menu. The "Move To" dialogue box will appear.

```
┌─────────────────────────────────────────┐
│ ▬                Move To                 │
├─────────────────────────────────────────┤
│                                          │
│  ◉ Track Number:      ┌───┐   ┌────────┐ │
│                       │   │   │   Ok   │ │
│                       └───┘   └────────┘ │
│  ○ Logical Block Number: ┌──────┐ ┌────────┐│
│                          │ 26   │ │ Cancel │ │
│                          └──────┘ └────────┘ │
└─────────────────────────────────────────┘
```
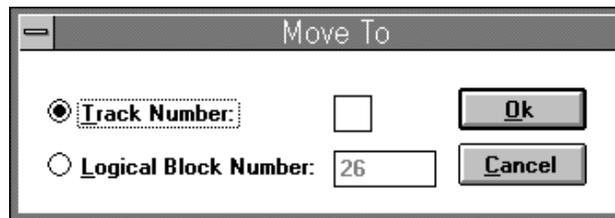
③ Click the "Logical Block Number" radio button, and input the logical block number of the desired destination track.
④ Click the "OK" button.

3.6.6 **Moving a file or directory to a different track**

■ **Using the mouse:**
From the location window, select the file or directory you want to move. Drag the selected file or directory to the desired destination on the track window.

■ **Using the menu:**
① From the location window, select the file or directory you want to move.
② Select "Move" from the Edit menu. The "Move To" dialogue box will appear.

```
┌─────────────────────────────────────────┐
│ ▬                Move To                 │
├─────────────────────────────────────────┤
│                                          │
│  ◉ Track Number:      ┌───┐   ┌────────┐ │
│                       │   │   │   Ok   │ │
│                       └───┘   └────────┘ │
│  ○ Logical Block Number: ┌──────┐ ┌────────┐│
│                          │ 26   │ │ Cancel │ │
│                          └──────┘ └────────┘ │
└─────────────────────────────────────────┘
```
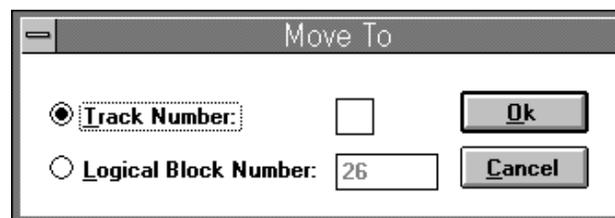
③ Click the "Track Number" radio button, and enter the track number of the destination track.
④ Click the "OK" button.

3.6.7 **Deleting a track**

Tracks created in Layout mode can be deleted.

■ **Using the keyboard:**
  From the track window, select the track you want to delete, then press the "DEL" key. When the confirmation dialogue box appears, click the "OK" button.

■ **Using the menu:**
① From the track window, select the track you want to delete.
② Select "Delete" from the Edit menu. The "Delete" dialogue box will appear.
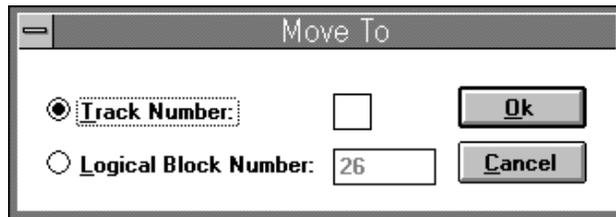
③ Click the "OK" button.

3.6.8 **Deleting a file**

Files created in Layout mode can be deleted.

■ **Using the keyboard:**
  From the location window, select the file you want to delete, then press the DEL key. When the confirmation dialogue box appears, click the "OK" button.

■ Using the menu:
① From the location window, select the file you want to delete.
② Select "Delete" from the Edit menu. The "Delete File" dialogue box will appear.
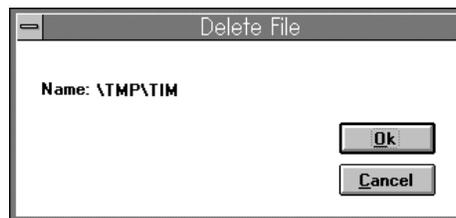
③ Click the "OK" button.

3.6.9 **Creating or dividing a track**

<u>Creating a track</u>

① On the track window, select the track or index to add a new track.

② Click the "Track" button. The "Track" dialogue box will appear.

```
┌─────────────────────── Track ───────────────────────┐
│ Track No:  1      Track Name:│              │        │
│ ┌─Mode of Track──┐ ┌─Pause──────┐  ┌─────────────────┐
│ │                │ │ ⊠ Include Pause │ Append New Track │
│ │  ○ Mode2       │ │                │ └─────────────────┘
│ │                │ │  Sec:   Frame: │ ┌─────────────────┐
│ │  ○ CD/DA       │ │                │ │Change Current Track│
│ │                │ │  │2│   │0│     │ └─────────────────┘
│ │                │ │                │ ┌─────────────────┐
│ └────────────────┘ └────────────────┘ │     Cancel      │
│                                        └─────────────────┘
└──────────────────────────────────────────────────────┘
```
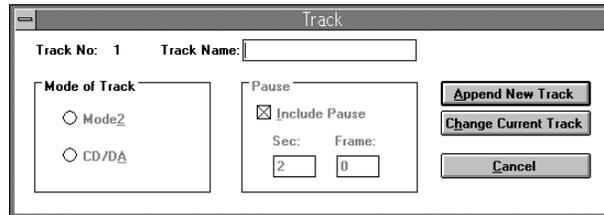
③ Set the mode for the track you want to create, and specify a pause if necessary.

④ Click the "Append New Track" button. The new track will be appended immediately in front of the selected track.

<u>Dividing a track</u>

① On the location window, select the file for the location at which you want to divide the track.

② Click the "Track" button. The "Track" dialogue box will appear.

```
┌─────────────────────── Track ───────────────────────┐
│ Track No:  1      Track Name:│              │        │
│ ┌─Mode of Track──┐ ┌─Pause──────┐  ┌─────────────────┐
│ │                │ │ ⊠ Include Pause │ Append New Track │
│ │  ○ Mode2       │ │                │ └─────────────────┘
│ │                │ │  Sec:   Frame: │ ┌─────────────────┐
│ │  ○ CD/DA       │ │                │ │Change Current Track│
│ │                │ │  │2│   │0│     │ └─────────────────┘
│ │                │ │                │ ┌─────────────────┐
│ └────────────────┘ └────────────────┘ │     Cancel      │
│                                        └─────────────────┘
└──────────────────────────────────────────────────────┘
```
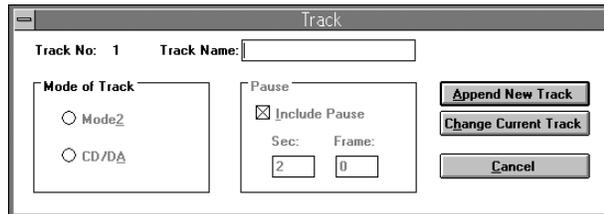
③ Set the mode for the track you want to divide, and specify a pause if necessary.

④ Click the "Append New Track" button. The new track will divide in front of the selected file.

<u>Changing the current track mode and the pause</u>

① On the track window, select the track or index for which you want to change the current track mode and pause.

② Click the "Track" button. The "Track" dialogue box will appear.

```
┌─────────────────────── Track ───────────────────────┐
│ Track No:  1      Track Name:│              │        │
│ ┌─Mode of Track──┐ ┌─Pause──────┐  ┌─────────────────┐
│ │                │ │ ⊠ Include Pause │ Append New Track │
│ │  ○ Mode2       │ │                │ └─────────────────┘
│ │                │ │  Sec:   Frame: │ ┌─────────────────┐
│ │  ○ CD/DA       │ │                │ │Change Current Track│
│ │                │ │  │2│   │0│     │ └─────────────────┘
│ │                │ │                │ ┌─────────────────┐
│ └────────────────┘ └────────────────┘ │     Cancel      │
│                                        └─────────────────┘
└──────────────────────────────────────────────────────┘
```
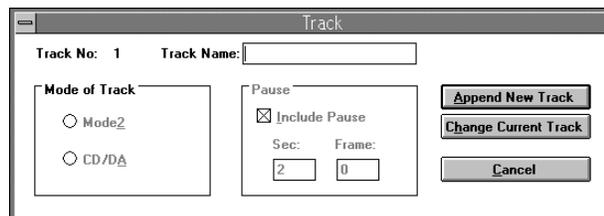
③ Set the track mode, then specify the pause.

④ Click the "Change Current Track" button. The track mode and the pause will be changed.

3.6.10 **A d d i n g   a n   i n d e x**

By using the "Index" button, you can add a track index in a specified relative time slot.

① Select the track on the track window, or alternatively, select the file on the location window.

② Click the "Index" button. The "Index" dialogue box will appear.
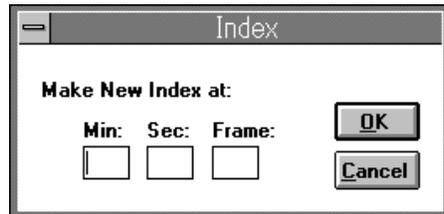
③ Enter the relative time of the track (or file) in minutes, seconds and frames.

④ Click the "OK" button.

3.6.11 **S p e c i f y i n g   t h e   l o c a t i o n   o f   a   f i l e**

Using the "Location" button, you can save the file selected by specifying the logical block location. However, the "Location" command cannot change the file location's position in the order. All the files after the specified file will have their locations shifted, in a knock-on effect.

① Click the "Location" button. The "Location" dialogue box will appear.
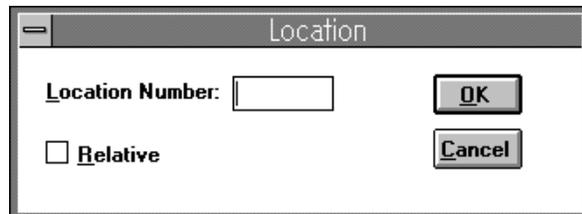
The source file will be saved to the position after the specified location. The value indicating the location must be the value following on from the previous file location. The current location of the head of the selected source file will be displayed in the text box.

② Enter the desired logical block number in the "Location Number" text box.

③ Click the "OK" button.

If you select the "Relative" checkbox option, the value specified in the "Location Number" text box will be the relative value (the offset) from the end of the file.

If you select the "Relative" checkbox option and specify "0" as the logical block value in the "Location Number" text box, this has a special meaning. If the file is interleaved, it will be positioned so that it does not overlap the area for the file directly in front. In short, instead of the files being written into the gap, the gap is kept as it is, and the file in question is placed after the end of the file directly in front.

Note

On the location window, the file in the specified location appears with an asterisk to the right of "Start Field".

| 3.6.12 | **Specifying the ISRC of a track** |

Using the "ISRC" button, you can specify the ISRC (International Standard Recording Code) for each number recorded on the disk. With the CDW-900E, you can write the ISRC for each number recorded on each track on the disk. The ISRC consists of the country code, the owner code, the year of recording, and the manufacturing number. It is used for copyright control.

Note

Please select the ISR code carefully, in accordance with compact disk manufacturing standards. If there is no particular requirement for an ISRC code, you may omit this specification.

① Click the "ISRC" button. The "ISR Code" dialogue box will appear.

② Input the information.
③ Click the "OK" button.

| 3.6.13 | **Specifying the file number** |

Using the "File No."button, you can specify the file number for a subheader source file.

Note

An interleaved file which has already been given an updated file number cannot be changed.

① Select the file for which you want to specify the file number.
② Click the "File No." button. The "File Number" dialogue box will appear.

③ Input the file number.
④ Click the "OK" button.

For a standard file, the file number is always 0. For a subheader source file, the file number is 1, and the number is incremented so that the file is not interleaved and so that it does not have the same number as another file.

When you input the file number, the file number of the following interleaved file will be incremented, starting from the number you have specified.

Note

On the location window, an asterisk appears to the right of the file whose number you have specified.

3.6.14　**Specifying the CD-ROM disk catalogue number**

If you are using the CDW-900E, you can use the "Catalog" button to specify the CD-ROM catalogue number.

Notes

When you specify the catalogue number, please adhere to compact disk manufacturing standards. If there is no particular requirement for a catalogue number, you may omit this specification.

① Click the "Catalog" button. The "Catalog Number" dialogue box will appear.

② Input a 13-digit barcode catalogue number.

③ Click the "OK" button.
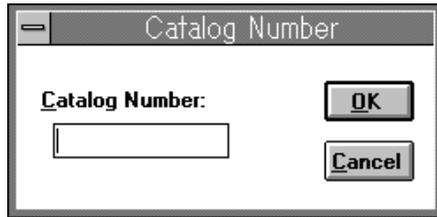
3.6.15　**Specifying the master information for the CD-ROM disk**

You can use the "Master" button to add the master information required when creating a master disk. For details of the parameters to be set, see the "Master Disk Creation Handbook".

■ Disk Name (name of CD-ROM disk)

■ Producer Name

■ Copyright Holder

■ Licence Area (area code)

■ Creation Date

① Click the "Master" button. The "Master Information" dialogue box will appear.
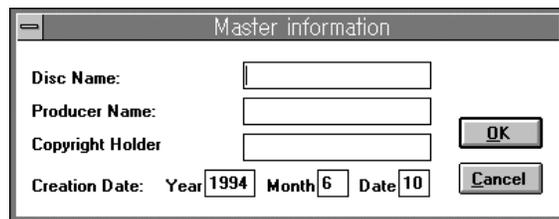
② Input the required information.

③ Click the "OK" button.

<table>
<tr><td>3.7</td><td></td></tr>
</table>

Writing to the CD-R Disk

When you have defined the volume descriptor, the directory structure and the disk layout, you can load the CD-R disk in a connected CD recording unit and write the source files to the CD-R disk.

When you click the "Rec" panel button, the format data file is created, then the CD recording unit connection is checked. Next, the "CONTROLLER" dialogue box - shown below - appears.

CD recording unit ID box

Status message area
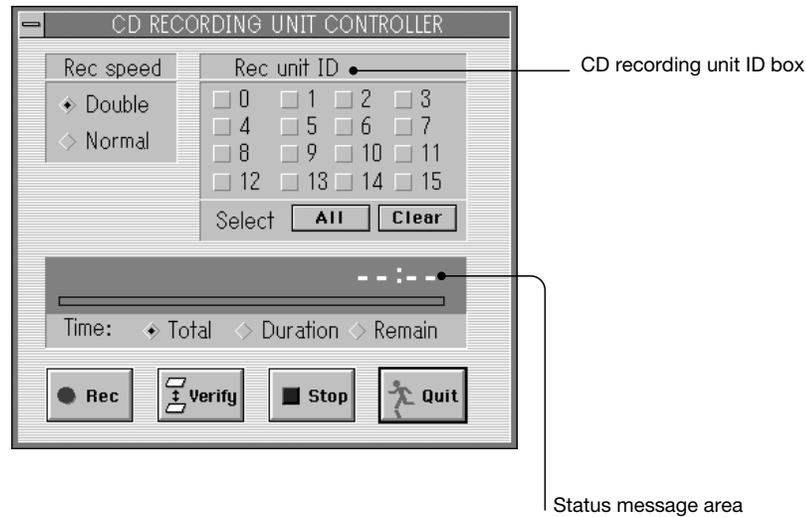
<table>
<tr><td>3.7.1</td><td></td></tr>
</table>

Selecting the CD recording units you are going to use

In the CD recording unit ID box, select only the checkboxes for the units you require. Each of the checkboxes available stands for one of the CD recording units connected to the computer. By clicking the "All" button, you can select all the available checkboxes, and by clicking the "Clear" button, you can clear all the checkboxes.

<table>
<tr><td>3.7.2</td><td></td></tr>
</table>

Selecting the recording speed

In accordance with the computer you are using, select one of the options in the "Rec speed" box. For details, see "Accessing source files" on Page 11.

<table>
<tr><td>3.7.3</td><td></td></tr>
</table>

Starting the recording operation

① Load CD-R disk(s) in the selected CD recording unit(s).
② Click the "Rec" button. The confirmation message will appear.
③ Click the "OK" button. Recording will begin.

■ **To abort recording:**
 Click the "Stop" button. A message will appear. Confirm whether you want to abort the recording operation. If you do want to abort, click Yes ("Y"). The output operation currently in progress will be cancelled.

During recording processing:

During recording processing, messages will appear in the status message line to indicate the current stage of the recording operation.

- ■ **Setup**   (the system and write environment are being set)
- ■ **Lead in**   (data is being written to the lead-in area)
- ■ **Track**   (data is being written to the track area)
- ■ **Lead out** (data is being written to the lead-out area)

When data begins to be written to the track area, the counter starts counting. By clicking one of the following buttons, you can change the information displayed by the counter.

- ■ **Total**   (total time needed to write the data to the track area)
- ■ **Duration** (time spent so far in writing data to the track area)
- ■ **Remain**   (time remaining until the writing of data to the track area terminates)

Note
The total time displayed does not include the lead-in and lead-out time, so it is not the true output time. When recording is carried out at double speed, the time displayed on the counter is twice the actual time taken.

- ■ **When the output terminates**
  When the output terminates, a message will appear, showing you that the operation is over.
- ■ **If an error occurs:**
  If an error occurs, an error message will appear. Check the message, refer to "The message box" on Page 47, and carry out the appropriate operation.

3.7.4   **V e r i f y i n g   t h e   o u t p u t**

This function only allows you to check the output on the CDW-900E unit which is connected to the computer via the SCSI interface. If you select a CD recording unit which is not directly connected to the computer, an error message will appear.

To verify the output, click the "Verify" button.
- ■   If an error is generated during verification:
  The verification function compares the data actually written on the disk with the original data on the hard disk. If there is a difference between the two, a verification error message is displayed. Errors can be caused by hardware errors, a scratch on a disk, dust or fingerprints on the surface of a disk, and so on.

Note
Even when two or more CDW-900E units are connected, the CD recording unit connected via the SCSI interface is the only one used in the verification operation. The verification operation is carried out at normal speed.

3.7.5   **T e r m i n a t i n g   t h e   w r i t e   o p e r a t i o n**

To terminate the write operation, click "Quit".

3.8 **Saving the Edited Format Information as a File**

The edited format information can be saved as a named file. This makes it much easier to repeat the whole operation when creating an identical CD-ROM disk in the future.

The following two type of files can be stored on the CD-ROM Generator.
- **Standard format information files (*.CCS)**
- **Disk image format information files (*.CCI)**

3.8.1 **Saving the file**

Saving newly-created or edited format information

① Select "Save" from the Edit menu. If you are saving newly-created format information, the directory dialogue box will appear, asking you to input a filename.
② Input the filename and click the "OK" button.

Notes
- Specify the name of the file in accordance with the DOS name restrictions.
- When you open and edit an existing format information file, the changes you have made will be saved without the directory dialogue boxes being displayed.

Saving edited format information under a different name

When you have opened and edited an existing format information file, you can save the edited file under a new name, leaving the original file unchanged.

① Select "Save As" from the File menu. The "File Save As" dialogue box will appear.
② Specify the directory you want to save the file to, and input the new filename. Next, select the appropriate file type in the "Save File as Type" drop-down menu.
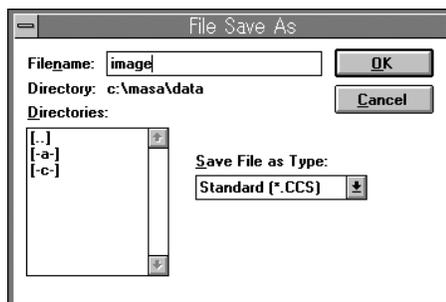
③ Click the "OK" button.

3.8.2 | **S a v i n g   t h e   i n f o r m a t i o n   a s   a   d i s k   i m a g e   f o r m a t   i n f o r m a t i o n   f i l e**

In the case of the last CD-ROM disk you create in a session on the CD-ROM Generator, there is no need to put a disk image on the hard disk for the purpose of outputting data to the CD recording unit. This means that you can save the time and hard disk space this disk image would otherwise take up. However, creating a disk image for the output has the following advantages:

■ **It is easier to control the source files**
  For example, if the source files have been split up and saved under several volumes, creating a disk image makes the file control operation easier. If you ever need to create an identical disk in the future, you can copy it using this disk image. However, you should save the original source files as they are, in preparation for future changes.

■ **You don't have to worry about the transmission speed**
  If several small source files are allocated to the disk in succession, the transmission of the data to the CD recording unit may not reach an adequate speed, and data transmission will then be impossible. This is particularly likely to happen when double-speed data transmission is carried out. If you create a disk image for the output, this problem can be avoided.

3.8.3 | **C r e a t i n g   a   d i s k   i m a g e   f i l e**

① Select "Save As" from the File menu. The "File Save As" dialogue box will appear.
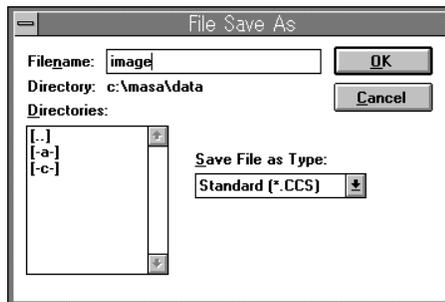
② Input the filename, then select "DiscImage (*.CCI)" on the "Save File as Type" drop-down menu.
③ Click the "OK" button. During the file write operation, a dialogue box will be displayed, showing that write processing is in progress.

3.9   **Opening an Existing File**

You can open an existing file to carry out the following operations:

■   **Editing the file**

■   **Editing the file and saving it under another name**

■   **Creating a CD-ROM disk which uses the file.**

① Select "Open" from the File menu. The "File Open" dialogue box will appear.
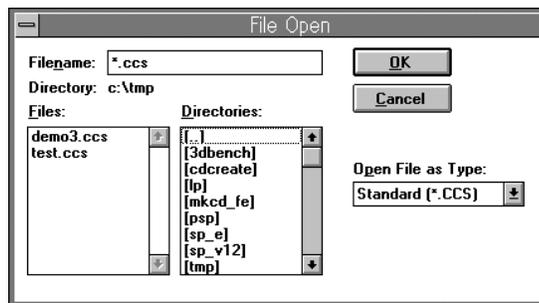
② Select the desired file type from the "Open File as Type" list box.

③ Select the file you want to open, then click the "OK" button.

3.10   **Creating a New File**

To create a new file, select "New" from the File menu.

If you do not save the edited format information, the "File Changed" dialogue box will appear. To save the information, click the "Yes" button (if you have not specified a name for the information, another dialogue box will appear, asking you to input the filename). If you do not want to save the information, click the "No" button.

A new untitled file will then be opened, and you can edit it.

Appendix

A MESSAGES

This section explains the messages which appear when the CD-ROM Generator is in use.

A-1 The Message Box

If you carry out the wrong operation, or fail to confirm an operation, on the CD-ROM Generator, a message will appear.

Message	Meaning
<FILE> is not CD-ROM Generator's Format Information File.	Check whether the file you are trying to open is in fact a CD-ROM Generator information file.
<FILE> is not found.	Check whether you have specified the correct file.
Aborted.	The operation has been aborted.
Abort recording.	If you abort recording now, this disk cannot be used again for writing data, and you will have to carry out the recording again, from the beginning, on a new disk. Also, if data is being written to the lead-in or the lead-out area, recording cannot be aborted until the data has finished being written to the area in question. After aborting recording, open the tray of the CD recording unit and shut it again immediately to reset it and prevent the error recurring.
Abort the verify operation?	Check whether you really want to abort the verify operation.
Bad track pause: <PAUSE>	An error has occurred in the pause value for the specified track head. Specify the pause value in seconds and frames.
Cannot change the track that includes files CD-ROM Directory Structure	The specified track is in a CD-ROM directory structure, so the mode cannot be changed.
Cannot change the track that includes Volume Descriptor and Path Tables.	The specified track contains a volume descriptor and path tables, so neither the mode nor the pause length can be changed.
Cannot find the DPMI server.	Add the EMM386 expanded memory emulator to the file "CONFIG.SYS".
Cannot find the SCSI device driver.	Add the SCSI device driver to the file "CONFIG.SYS" on your computer.
Cannot find the SCSI Host Adapter.	You need an Adaptec AHA-154x SCSI host adapter. Read your host adaptor manual, install the board and connect it to the CD recording unit.

Message	Meaning
Cannot initialize CD Recording Unit.	If your last action was to abort recording, or if an error has occurred on the CD recording unit, you should either switch the power off and then on again, or open the CD recording unit tray and then close it again immediately. If you activate the controller before this operation has been safely carried out, you may not be able to initialize the CD recording unit. If this is the case, terminate the controller operation, open the tray and then close it again immediately. The "CONTROLLER" dialogue box will appear again.
Cannot obtain enough memory.	This software needs at least 450KB in addition to the amount of memory normally used by MS-DOS. Check your "CONFIG.SYS" and "AUTOEXEC.BAT" files, delete any superfluous files from the memory, then reboot the computer.
Cannot read the format data file.	The format data file is not in the working directory. Re-execute the procedure for creating the CD-ROM disk. There may also be problems regarding the system setup: if so, re-install the CD-ROM Generator.
Cannot save a format information file.	The current format information file cannot be written to the disk (probably because there is not enough space on the disk).
CD Recording Unit error occurs.	Close the "CONTROLLER" dialogue box, open and close the tray of the CD recording unit to reset it. If this does not solve the problem, check the hardware connections and the DIP switch settings. If this still does not solve the problem, contact Sony Computer Entertainment's Operations Division, whose address is given at the end of this manual.
Data transfer operation fails.	The data read operation cannot keep pace with the data write operation. You should either create a disk image or set the recording speed to normal speed. Try carrying out the write operation again and make sure no other problems occur while the data is being written.
No disk is loaded in the tray.	Check the lamps on the CD recording unit, and check whether a disk has been loaded in each unit.
File <FILE> has changed. Save?	Changes have been made to the current file (<FILE>). Before carrying out any other operation, click the "Yes" button to save the file (i.e. to overwrite <FILE>). If you do not want to save the changes, click the "No" button. If you want to continue with the current file operation instead of carrying out a new operation, click the "Cancel" button.
Format information mismatches.	Either the CD-ROM format information contains a source file not found in the DOS file system, or the file size is different. You should either provide the required file or update the format information.

Message	Meaning
Old version of DPMI server is used.	Add the EMM386 expanded memory emulator for the DPMI server Version 0.90 or upward to the file "CONFIG.SYS".
Recording is completed.	Recording has terminated normally.
Start recording.	Start recording when you are ready.
Start verifying.	Start verifying when you are ready.
Starting up in diagnostic mode.	Select this mode if you want to test whether the system is connected correctly.
The CD Recording Unit is not connected.	Check the connection. If it is not correct, switch off the power and connect the unit again (see "To connect the CD recording unit(s)" on Page 5).
The file is not 441.kHz, 16bit format: <PATH>	The file has to be a waveform audio file with 16 quantization bits and a sampling frequency of 44.1kHz (these are the specifications for files used as CD-DA source files).
The File Number is illegal. The file(s) cannot be deleted.	The specified file number is wrong, so the file cannot be changed. The file number should be a number between 1 and 254. The specified file or directory is in a CD-ROM directory structure, so it cannot be deleted in Layout mode. Delete it in Directory mode.
The file(s) cannot be located at the position.	Files and directories cannot be placed in the load-in or lead-out area, or in front of the volume descriptor. Also, a file in a CD-ROM directory structure cannot be moved to a track which has a different mode.
The same file or directory name exists in the CD-ROM directory structure.	There is a file or directory with the same name in the specified path, so the directory cannot be created.
The same file name exists. Overwrite?	A file with this name already exists. Select "Yes" if you want to overwrite this file, and "No" if you do not want to save to this file.
The SCSI Host Adapter is incorrect.	Check whether the SCSI host adapter is an Adaptec AHA-154x. You should also install the board in accordance with the adapter manual, and check that it is connected to the CD recording unit.
The time slot is illegal.	The specified time is incorrect, so the index cannot be added.
The track(s) cannot be located at the position.	A track cannot be placed in the lead-in or lead-out area.
There is no space to save disk image.	There is not enough free space to save the disk image. Delete some files to increase the free area on the disk.

Message	Meaning
Too many indexes in track <NUM>.	According to CD standards, up to 99 indexes may be recorded. If track <NUM> has 100 or more as an index, this message will appear. You should reduce the number of track divisions.
Total time exceeds disk recording time.	Check the time remaining on the CD-ROM Generator time counter. If necessary, change the data size or use a disk with a longer recording time.
Untitled file has changed. Save?	The current untitled file has been edited. Before carrying out another operation, click the "Yes" button (if you want to save it as a new file). If you do not want to save it, click the "No" button. If you want to cancel the new operation and carry out an operation on this file, click the "Cancel" button.
Verify fails.	The data on the CD-ROM disk is different from the data prepared on the CD-ROM Generator. Check whether the data write operation terminated normally, and check whether the disk in the tray is the disk to which the data was written. It is also possible that the disk is scratched, so take a new disk and repeat the data write operation. If the same problem occurs, contact Sony Computer Entertainment's Operations Division, whose number is given at the end of this manual.
Verify is completed.	Verification has terminated normally.
Verify is limited to one CD Recording Unit only.	The verify operation can only be carried out on the single CD recording unit which is connected via the SCSI cable. Select one CD recording unit only and carry out verification again.

F o r m a t   I n f o r m a t i o n   E r r o r   M e s s a g e s

If format conversion cannot be carried out, a message appears in the "Error and Warning Message" window. Format conversion errors occur when the specified file is not found, or when the filename is incorrect or contravenes name restrictions. In the following table, the symbol "<SYMBOL>" stands for the variable to be substituted for the appropriate character string in the actual error message.

Message	Meaning
bad isrc format: <VALUE>	There is a format error in the value specified as the ISRC (International Standard Recording Code).
cannot find system area file: <PATH>	The file specified as the source file in the system area is not found.
cannot find message sector file: <PATH>	The file specified as the source file for the message sector is not found.
catalogue number must consist of 13 digits: <VALUE>	The catalogue number has to have 13 digits. For details, see "Specifying the CD-ROM disk catalogue number" on Page 40.
directory ID includes extension field: <PATH>	A directory name cannot have an extension.
directory ID shall not include version number: <PATH>	A directory name must not include a version number.
directory nest is too deep: <PATH>	The directory tree can have no more than 8 levels.
file ID extension exceeds 3 chars: <PATH>	An extension can be no more than 3 characters long.
file size differs from source file: <PATH>	Update or delete the file.
file/directory ID body exceeds 8 chars: <PATH>	Filenames and directory names can be no more than 8 characters long.
file/directory ID conflicts with <PATH 1>:<PATH 2>	There are certain restrictions concerning the characters which may be used in filenames on the CD-ROM disk, so MS-DOS filenames cannot be converted just as they are. Convert all the filenames in accordance with "Filenames of source files" on Page 11.
illegal file version number: <PATH>	Any characters following a comma in a filename are perceived as the version number. The version number must be a number between 1 and 32768.
isrc must consist of 12 characters: <VALUE>	The ISRC must be 12 characters long.
no such file or directory: <PATH>	The specified source file is not found. Either delete the file or provide the source file.

Message	Meaning
too many extension fields: <PATH>	Any characters following a full stop in a filename are perceived as the extension. If a filename has more than one full stop in it, this message will appear.
too many version fields: <PATH>	Any characters following a semi-colon (;) in a filename are perceived as the version number. If a filename contains more than one semi-colon, this message will appear.
version field includes illegal char: <PATH>	Any characters following a semi-colon (;) in a filename are perceived as the version number. The version number must be a number from 1 to 32768.

| A-3 | Format Information Warning Messages |

If an abnormality is found during format conversion processing, a warning message is displayed. Always check whether or not the message is a warning message. If a warning message is displayed, we recommend that you check the format information.

Message	Meaning
cannot find Abstract File:<FILE> cannot find Application File:<FILE> cannot find Bibliographic File:<FILE> cannot find Copyright File:<FILE> cannot find Data Preparer File:<FILE> cannot find Publisher File:<FILE>	The file specified in the volume information stating the publisher, copyright and other data is not found in the directory. Specify the correct filename as described in "Specifying the volume descriptor" on Page 17.
file is modified after Volume Creation or Modification:<PATH>	The file "<PATH>" has been created or modified since the creation or modification of the specified volume. Correct the volume creation or modification date.
output may be failed:<LOCATION>	This message is displayed if an adequate data transmission speed cannot be maintained in the vicinity of the logical block "<LOCATION>", making it impossible to perform output.
specified time is after Volume Creation or Modification:<PATH>	The recording date specified in the disk volume is later than the volume creation date. Correct the recording date.
the assigned location is <LOCATION>c, but located at <LOCATION>:<PATH> the assigned relative location is +<LOCATION>, but located +<LOCATION>:<PATH>	This message is displayed if <PATH> is not allocated as specified.

Message	Meaning
too small track	Each track on the CD-ROM disk must be at least 3 seconds long. Check the track window and increase the quantity of data for the track.
Volume Creation after Modification Date and Time	The specified volume modification date is before the volume creation date. Correct the specified date, or the volume creation date/modification date.

B MENU FUNCTIONS

This section gives tables showing the menu functions available on the CD-ROM Generator menu bar.

You can select a command directly by pressing the shortcut keys.

Some commands also have mnemonics (the mnemonic is the underlined character in the menu item name): when the desired command is useable (i.e. when the pull-down menu is displayed), you can execute the command by pressing the key for the corresponding mnemonic.

B-1 Menu Bar

Item	Function	Shortcut	Mnemonic	See Page:
File	File operations	Alt+F	F	-
Edit	Edit format information	Alt+E	E	-
Tree	Control directory structure	Alt+T	E	-
View	Change contents list window	Alt+V	V	-
Help	Display help message	Alt+H	H	-

B-2   **File Menu**

Item	Function	Shortcut	Mnemonic	See Page:
New	Open new format file	-	N	45
Open	Open existing format file	-	O	45
Save	Save changes to existing format file	-	S	43
Save As	Save format file or disk image file	-	A	44
Preference	Change working directory	-	P	-
Exit	Terminate CD-ROM Generator	Alt+F4	X	16

B-3   **Edit Menu**

Item	Function	Shortcut	Mnemonic	See Page:
Undo	Cancel last operation	Alt-BsSp	U	-
Cut	Delete highlighted text and move it to clipboard	Shift-Del	C	-
Copy	Copy highlighted text to clipboard Ctrl-Ins		O	-
Paste	Copy contents of clipboard to current location	Shift-Ins	P	-
Delete	Delete highlighted text	Del	D	-
Clear All	Delete all changes you have entered	Ctrl-Del	L	-

B-3-1   **Directory mode**

Item	Function	Shortcut	Mnemonic	See Page:
Put Files and Directories	Copy files and directories to specified directory	Ins	P	23
Create Directory	Create new directory	-	C	24
Move	Move file or directory to another directory	-	M	24
Delete	Delete file or directory	Del	D	25
Rename	Change name of file or directory	-	R	25
Select All	Select all files and sub directories in current directory	-	S	-
Update	Check whether volume descriptor information matches actual source file	-	U	26
Property	Select function which is the same as the command at the bottom of the window	-	T	-

B-3-2   **Layout mode**

Item	Function	Shortcut	Mnemonic	See Page:
Put Files	Copy file to specified position	Ins	P	33, 34
Move	Move file on track to specified location	-	M	34, 35
Delete	Delete file	Del	D	36
Property	Select function which is the same as the command at the bottom of the window	-	T	-

B-4 **Tree menu (Directory mode only)**

Item	Function	Shortcut	Mnemonic	See Page:
Expand One Level	Expand by one directory level	-	X	29
Expand Branch	Display whole directory	-	B	29
Expand All	Display all directories in directory tree	-	A	29
Collapse Branch	Delete directory	-	C	29

B-5 **View menu (Directory mode only)**

All File Details	Display all file information	-	A	30
Partial File Details	Display part of file information	-	P	30

B-6 **Help menu**

Item	Function	Shortcut	Mnemonic	See Page:
Contents	Display help	-	C	-
About CD-ROM Generator	Display version number	-	A	-

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