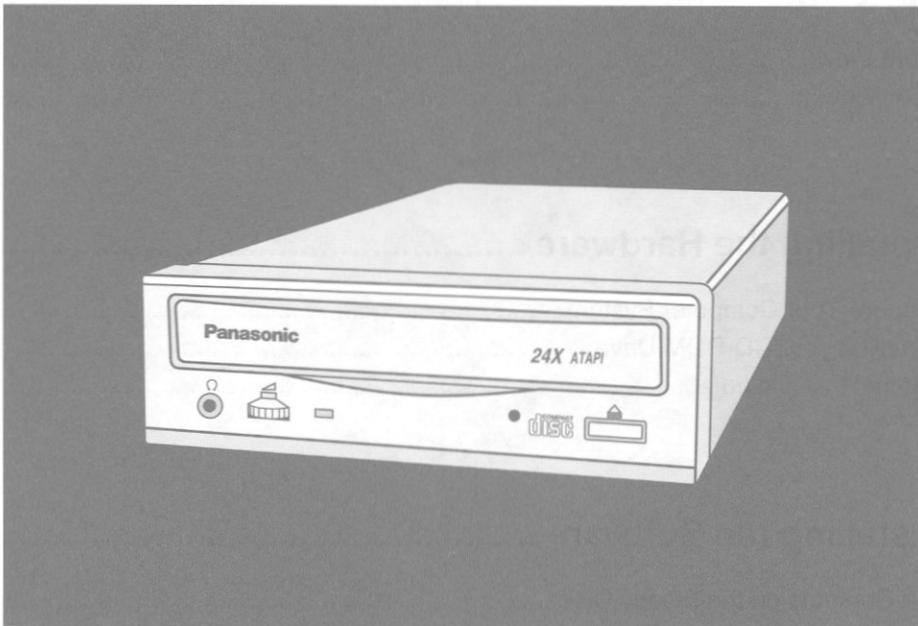# Panasonic

Operation Manual
LK-MC686BP
Internal CD-ROM Drive

Please read through these instructions before operating this unit.

Table of Contents

C^{HAPTER} 1 Parts and Functions 10

C^{HAPTER} 2 Installing the Hardware 12

C^{HAPTER} 3 Installing the Software 16

Important Safety Notice

(1) To prevent fire or electric shock, do not expose this appliance to rain or moisture.
(2) To avoid electric shock or damage to the eyes due to laser beam, do not attempt to disassemble the cabinet
(3) To reduce the risk of electric shock, do not remove cover Refer servicing to the qualified personnel only

Notice

(1) Reproduction of any part of this publication without authorization is prohibited
(2) The manufacturer reserves the right to revise this document without notice at any time
(3) If any questions arise concerning this document, please contact your sales representative, or Panasonic at 1-800-Panasys (1-800-726-2797)

Federal Communications Commission (FCC) Radio Frequency Interference Statement

Class B Computing Device

Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules These limits are designed to provide reasonable protection against harmful interference in a residential installation This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications However, there is no guarantee that interference will not occur in a particular installation If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures

— Reorient or relocate the receiving antenna
— Increase the separation between the equipment and receiver
— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
— Consult the dealer or an experienced radio/TV technician for help

---

FCC Warning

Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment

---

Caution

Use shielded connecting cables in order to meet FCC emission limits and also to prevent interference to nearby radio and television reception

Laser Safety Information

Class 1 Laser Product

This equipment is certified to comply with DHHS Rule 21 CFR Chapter 1, Subchapter J in effect as of date of manufacture.

This equipment is classified as a Class 1 level LASER product and there is no hazardous LASER radiation.

Caution

1) The use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
2) The drive is designed to be incorporated into a computer-based system or unit which has a cover. Your CD-ROM drive may not be used as a stand-alone unit.
3) Do not open the drive unit; no user adjustable or serviceable parts are inside.

```
CLASS 1 LASER PRODUCT

LASER KLASSE 1
```

• This label is attached to the upper shield on the top of the drive unit.

CAUTION – INVISIBLE LASER RADIATION WHEN OPEN DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS	VORSICHT – UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET NICHT IN DEN STRAHL BLICKEN AUCH NICHT MIT OPTISCHEN INSTRUMENTEN
ADVARSEL – USYNLIG LASERSTRÅLING VED ÅBNING. SE IKKE IND I STRÅLEN – HELLER IKKE MED OPTISKE INSTRUMENTER.	ADVARSEL – USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES. STIRR IKKE INN I STRÅLEN ELLER SE DIREKTE MED OPTISKE INSTRUMENTER.
VARNING – OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÄR ÖPPNAD. STIRRA EJ IN I STRÅLEN OCH BETRAKTA EJ STRÅLEN MED OPTISKA INSTRUMENT.	VAROI NÄKYMÄTÖNTÄ AVATTAESSA OLET ALTTIINA LASERSÄTEILYLLE. ÄLÄ TUIJOTA SÄTEESEEN ÄLÄKÄ KATSO SITÄ OPTISEN LAITTEEN LÄPI.

• This label is attached to the bottom of the drive unit.

Laser Specification

Type .... Semiconductor laser GaAlAs
Wave length .... 790 ± 25 nm
Divergence .... $\theta = 53.5° \pm 1.5°$
Output Power .... 0.22 mW

Getting Started

Congratulations on your purchase of the Panasonic LK-MC686BP. The Panasonic LK-MC686BP CD-ROM drive features Panasonic's 24X speed technology. This manual will provide you with instructions for installing your CD-ROM drive, Driver Software, and Utilities. Thank you for choosing the Panasonic CD-ROM drive for you CD-ROM playing needs. Before going ahead with installation of your CD-ROM drive, please read the important notes in this section.

Kit Contents

The following is a checklist of items which are included with your Panasonic CD-ROM drive. Be sure to save the original Box and packing materials to ensure safe future shipments or transportation of your Panasonic CD-ROM drive.
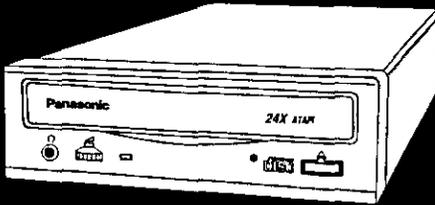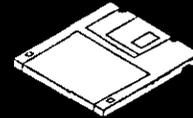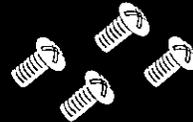

■ CD-ROM Drive unit
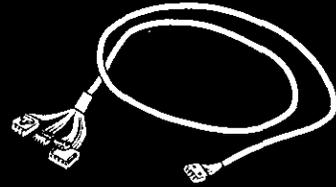
■ Audio Cable

■ Operation Manual

■ Installation Disk (1disk)

■ Mounting Screw (4pcs.)
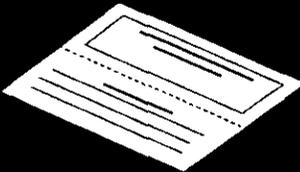
■ Warranty & Registration Card
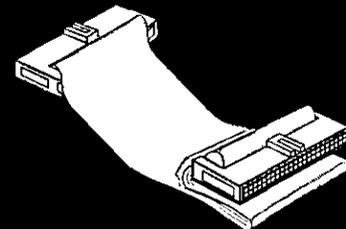
■ Interface Cable

System Requirements

Computer
  IBM PC-AT or Compatible
  80286, 80386, 80486 and Pentium
  personal computers
Operating System
  PC-DOS Ver 6 3 or later
  (included "MSCDEX")
  MS-DOS Ver 6 0 or later
  (included "MSCDEX")
  MS Windows 3 1/NT 3 1/NT 3 5/NT 3 51/NT 4 0
  MS Windows 95
  OS/2   2 1
          2 11
          Warp 3
          Warp 4

Media for your CD-ROM

CD-ROM stands for read-only memory using an audio compact disc system as a media package which handles digital data

This drive unit uses CD-ROM discs which bear the following mark

Only digital audio compact discs having this mark can be used with this unit

Handling Discs

Most problems are usually caused by the following

- Dust or finger-prints on the surface of the CD-disc
- Random electrical noise
- Scratches and defects on the surface of CD-disc

To avoid any of these problems, please keep mind the following guidelines when handling compact discs
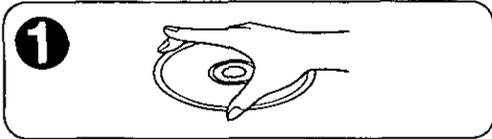
❶	Hold the disc by the edges, do not touch the surface of the disc
❷	To remove dust or fingerprint, use a clean, soft, dry cloth When cleaning, wipe gently in a radial direction
❸	Do not write on the reading side, or paste paper to the surface of the disc Should not paste any label to the outer back surface (the label side) of the disc, or it generates drive vibration due to imbalance of the disc
❹	Do not store the disc in a place where the temperature is high
❺	Do not use benzine, thinners and cleaners, etc A very mild soap and water solution should be used to clean the disc
❻	Do not make the center hole larger
❼	Do not bend the disc
❽	Do not drop the disc, or subject it to shock
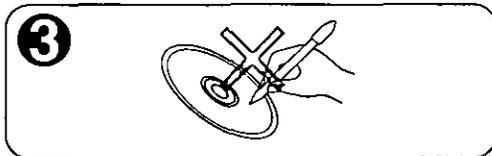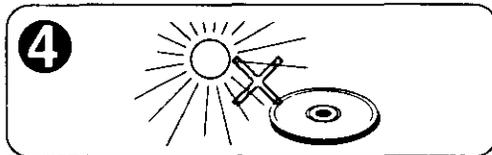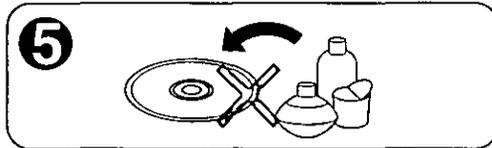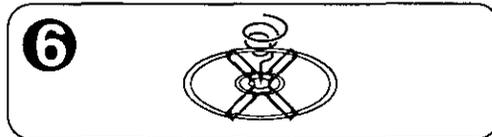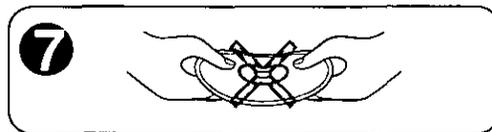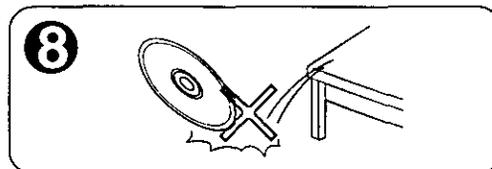
When Transporting

To avoid damage

* Keep the original packing materials for the drive unit
* Before transporting the drive unit, remove CD-ROM disc from the drive unit and repack the drive unit in its original packing

When Installing

Do not install the CD-ROM drive in environments where the drive would be subjected to

* High-temperature, high-humidity, or extreme temperature changes
* Dust
* Excessive vibration / sudden shock
* Inclines or angled operation
* Direct sunlight

When Using

* Never push objects of any kind through the cabinet
* Never spill liquid of any kind on the unit
* Do not place foreign objects in the disc insertion slot and attempt to operate
* This drive is not user serviceable, do not open or remove cover

When Operating

To avoid data errors

* Do not move the drive unit while operating
* Do not operate the unit immediately after a sudden increase in temperature

Feature Summary

(1) Enhanced IDE Interface with ATAPI (AT Attachment packet Interface) support
(2) Automatic loading with tray
(3) Horizontal and Vertical installation (Vertical 12 cm Disc only)
(4) Audio playback capability
(5) 5 1/4" Half Height design

Power Saving

Your CD-ROM drive enters the **Power Save Mode,** if no command is sent to the drive from the host for more than 5 minutes During Power save mode, the laser and spindle motor stop Re-start is automatic when the Host Command is received

1 Parts and Functions

1 1 Front View

Disc Tray
Accepts a disc

Emergency Eject Hole
Insert an instrument such as straightened paper
clip into this hole to manually eject the tray
(See page 23)

Panasonic

24X ATAPI

disc

Eject/Load Button
Ejects and loads the disc tray.

Busy Indicator
Lights when data is being accessed from the disc,
or the drive is playing an audio CD

Volume
Adjusts audio output level of Headphones

Headphone Jack
Headphones can be connected using a 3 5 mm stereo mini plug

Digital Audio Out Connector

Used to access Red Book digital audio directly from the drive

Audio Connector (Analog)

Connects to either your sound board or interface board

IDE Interface Connector

Connects your CD-ROM drive to your interface board or your computer's interface port via the included interface ribbon cable

DC (In) Connector

Connects to your PC's power supply

Jumper Pin

There are 3 Setting mode on the back of your CD-ROM drive These are used to set the Setting Please refer to page 13 for more information

2 Installing the Hardware

Please read this section completely before starting installation.

The following instructions will guide you through the process of installing the CD-ROM drive

2 1 Prepare Your Computer System

Floppy
Disk Drive
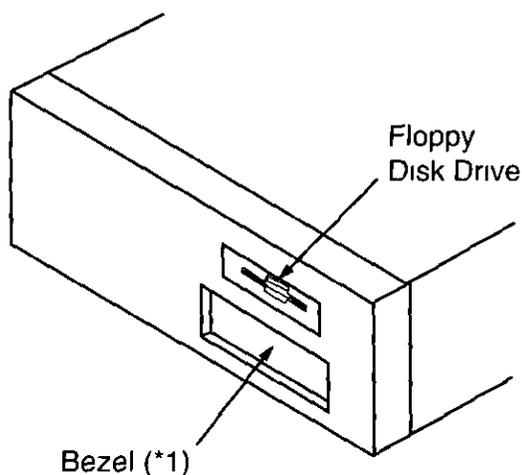
Bezel (*1)

Figure 1

Consult your system operation manual for information before procedure

a Turn off your system and all connected devices Unplug the power cord

b Remove the top cover from your system

c Remove the bezel (*1) on a vacant disk drive bay

2 2 Installing your CD-ROM Drive

1) Mounting CD-ROM Drive

a Remove the drive from its packaging

b Check jumpers for proper Setting Slave (Figure 3)

c Look above your vacant disk drive bay If it is occupied by a floppy disk drive, slide this floppy disk drive forward a couple of inches Do not disconnect its cables This will allow for a easier CD-ROM drive installation (Figure 2)

d Slide the CD-ROM drive into the vacant bay until it is parallel with the floppy disk drive

e Connect DC power cable, interface and audio cable to the back of the drive (Figure 3)

f Gently slide the drive into the drive bay Secure with included screws

Mounting Screw

Floppy
Disk Drive

CD-ROM
Drive

Mounting Screw

Figure 2

DC (IN) Connector

Interface Connector

Jumper Pin

Audio Out Connector

DC Power Cable

Digital Audio Out
Connector

Audio Cable

Interface Cable

Jumper

Drive-Select (Master/Slave/CSEL)

Cable select (CSEL)

Slave (default)

Master
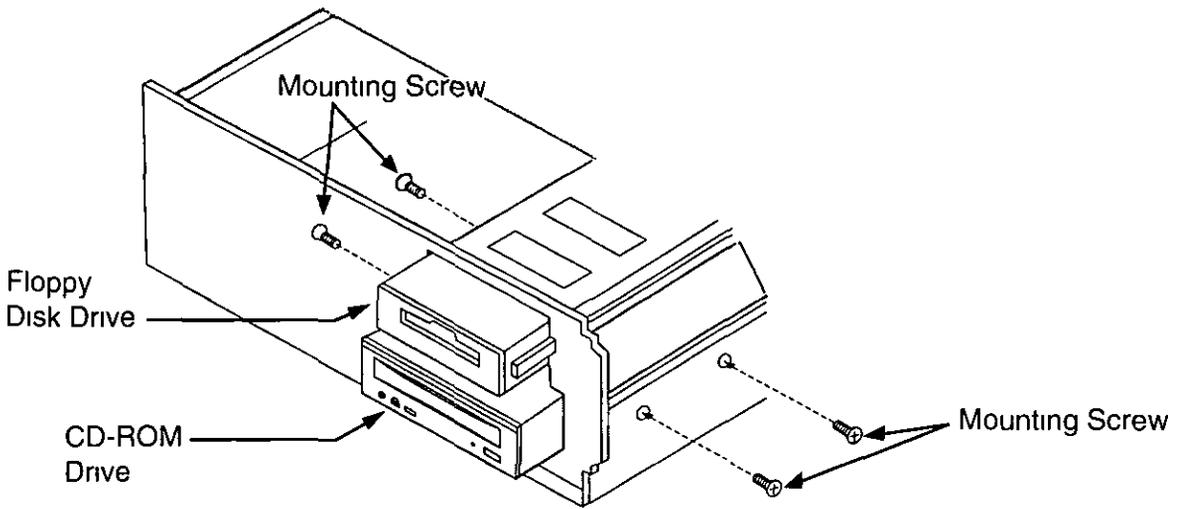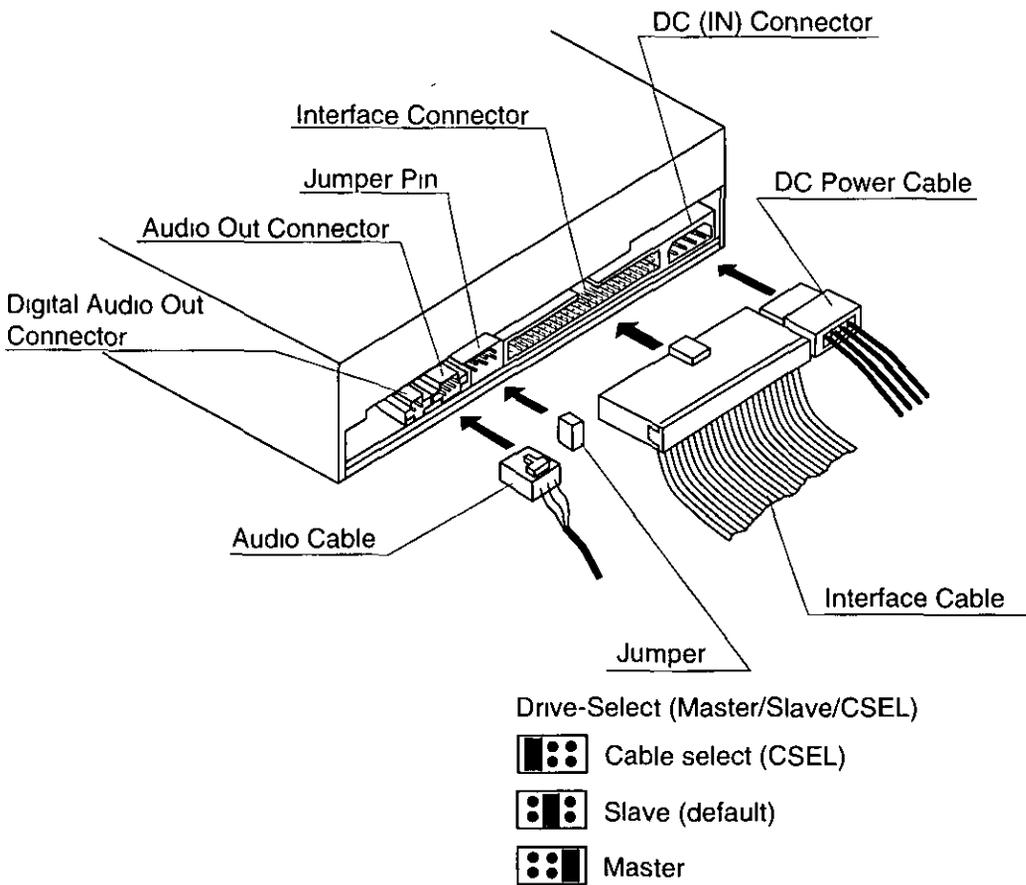
Figure 3

2) Connecting to your system

When your personal computer is Enhanced IDE type
Newer PCs may include a built-in Enhanced IDE Controller in which case it will be necessary to disable its secondary Enhanced IDE port Consult your computer system manual to determine if your system includes an Enhanced IDE Interface and the proper procedure to disable the secondary port If the secondary port of the built-in Enhanced IDE Controller can not be disabled then connect the LK-MC686BP directly to the built-in secondary port (See figure 4)
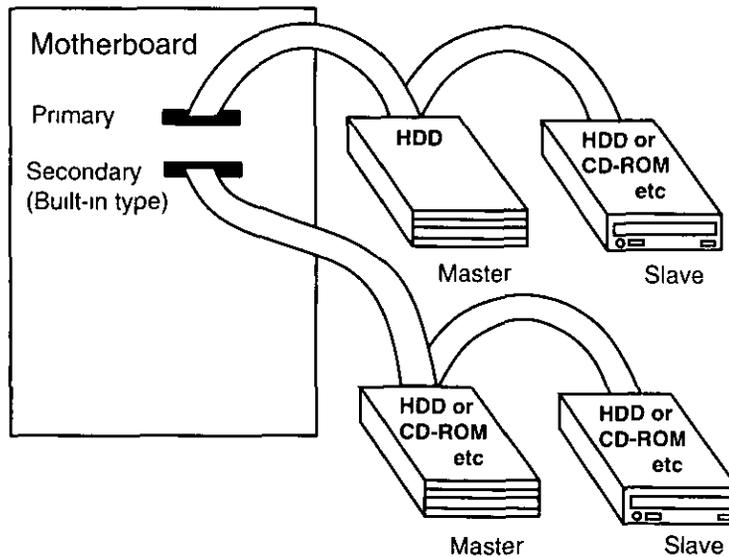
Possible CD-ROM Drive installations in a system

Figure 4

14

* Possible connections for secondary IDE port

Case	Master	Slave	Remarks
1	CD-ROM	None	Most recommended configuration
2	HDD	CD-ROM	BIOS supports HDD on a secondary port (Secondary port on Motherboard use only)
3	CD-ROM	CD-ROM	In case of two CD-ROM drives connection to a secondary port

The HDD must always be configured as a master device
HDD Hard Disk Drive   CD-ROM CD-ROM Drive

Note:
When you require I/F board (not included) to install CD-ROM drive to your system
Consult your dealer

2 3 Vertical Installation

Setting a Disc to the Tray Vertically
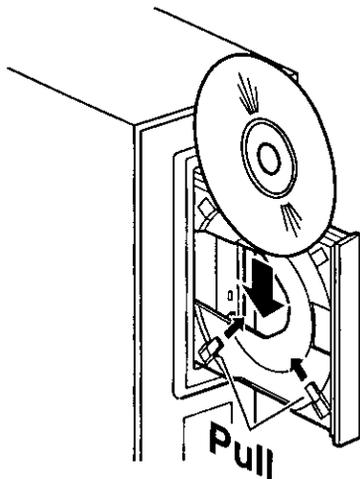
There are four disc clips that will hold a disc in place vertically on the CD-ROM drive tray When you install the CD-ROM drive vertically, please pull the two disc clips near the bottom edge of the disc tray and load a disc vertically as left figure 5

Figure 5

③ Installing the Software

③ 1 File Contents on the Floppy Disk

The following is contents of programs included on your installation floppy disks

Disk Name	File Contents
CD-ROM Drive Installation Software	• Installer • Device driver • Utility CD Listener • ReadMe

③ 2 Installing Device Driver Software for DOS / Windows 3.1

Installation

To operate your Panasonic CD-ROM drive with your personal computer, you will need to install programs to control the drive, known as device drivers, as well as MS-DOS CD-ROM extensions. These programs are automatically loaded through the easy installation program in Section③ 3. Before proceeding to the Easy Installation Section, please review the icons listed below.
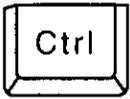
Ctrl	.... Control key
Alt	.... Alternate key
Delete	.... Delete key
☐ + ☐	.... When two or more keys are to be pressed simultaneously.

③ 3 Easy Installation (for DOS / Windows 3.1)

This section leads you through the automatic installation procedure provided for your system
If you prefer to manually install the drivers and modify your **CONFIG.SYS** file and
AUTOEXEC BAT file, etc , go to **APPENDIX A**

① Turn the power of your personal computer on If your system automatically loads
Windows 3 1, **you must Exit Windows 3.1** and reach the DOS prompt C \
This explanation assumes that your floppy drive is designated **A** and your hard
disk drive **C** If, however, you have used other letters to designate your drives,
please substitute the appropriate letters

② Insert the floppy disk **CD-ROM Drive Installation Software** into your floppy disk
drive

③ Type **A** and press <Enter> The current drive changes to **A**

④ Type **INSTALL** and press <Enter> The program will then ask for the destination
drive The software will then be transferred to the hard disk, and the **CONFIG.SYS**
and the **AUTOEXEC.BAT** files will automatically be changed

⑤ Follow the procedures displayed on your screen until the completion message
appears

⑥ Eject the floppy disk from the floppy disk drive After the installation, keep this
floppy disk for future use

⑦ To restart the system, press the reset button on your personal computer, or

$$\boxed{Ctrl} \quad + \quad \boxed{Alt} \quad + \quad \boxed{Delete}$$

Check that the device driver of this equipment has been installed during the
start-up procedure Every time DOS is started, the device driver of this equipment
will be automatically installed

18

3 4 References (for DOS / Windows 3.1)

This section provides detailed descriptions regarding the device driver

* For the spaces enclosed by < >, enter the characters indicating relevant data
  The characters enclosed by [ ] may be omitted
  A space is indicated by ⊔

Device Driver

• File name .... ATAPIMGR.SYS

• Function   ASPI Manager under DOS (using ATAPI I/F)
• Format   DEVICE = [<Drive name>] [<Path name>] <Device driver name>
                       (This line appears in CONFIG SYS)
• Example of input   DEVICE = C \ATACR\ATAPIMGR SYS

• Parameter   /P nnn,xx
                       ATAPI base I/O port address (hex)
                       Primary connection   nnn=1F0
                       Secondary connection   nnn=170
                       Tertiary connection   nnn=1E8
                       Quaternary connection   nnn=168

                       Interrupt number (IRQ)
                       Primary connection   xx=14,10,11,12 or 15
                       Secondary connection   xx=15,10,11,12 or 14
                       Tertiary connection   xx=10,11,12,14 or 15
                       Quaternary connection   xx=10,11,12,14 or 15
                       Note: IRQ setting of the device driver must match the setting on the
                       interface board

                       Example DEVICE = C \ATACR\ATAPIMGR SYS ⊔ /P 170,15

                       ―――――――――――――――――――――――――――――――――――――

                       /W n
                       When PC read data from CD-ROM drive, Driver insert waiting value
                       into read cycle one by one
                       If you are using PC that are not supported IOCHRDY, please set this
                       value (waiting value) (Example n=10)

                       ―――――――――――――――――――――――――――――――――――――

                       /NDR
                       No reset to CD-ROM Drive at boot configuration
                       This option make invalid that Device Driver reset to CD-ROM drive at
                       boot sequence

                       ―――――――――――――――――――――――――――――――――――――

                       /NRS
                       No issue Request Sense Command
                       If you request to driver sequence that don't issue Request Sense to
                       CD-ROM Drive automatically

19

/C: n
calculate Cycle Time between PC's IDE port and Drive. Cycle Time is
as follows:
PIO Mode 0: .... 600 ns (wasted time for read data one by one)
PIO Mode 1: .... 384 ns (wasted time for read data one by one)
PIO Mode 2: .... 240 ns (wasted time for read data one by one)
PIO Mode 3: .... 150 ns (wasted time for read data one by one)
n= 0, 1, 2, 3 .... (0: PrimaryMaster,   1: PrimarySlave,
                                          2: SecondaryMaster,   3: SecondarySlave)

/T: n
Set up Timeout value of drive's signal checking.
You can set up Timeout value of Drive's DRQ/BUDY/DRDY bit check.
In case of n=1 Timeout value is one second. Default value is 30 (30
seconds).

/LUN
Supported to set LUN number is zero (0) to ASPI I/F Supported for PD
drive. (Default is not supported)

- **File name .... SR_ASPI.SYS**
- Function .... Provides the system requirements to operate CD-ROM drive on DOS
                                        and Windows 3.1.
- Format......................... DEVICE = [<Drive name>:] [<Path name>] <Device driver name>
                                        /D: <Device name>
                                        (This line appears in CONFIG.SYS.)
- Example of input .... DEVICE = C: \ATACR\SR_ASPI.SYS ⌐ /D:MSCD000

- Parameter .... /D: <Device name>   * This option may not be omitted.
                                        Assign the <Device name> equivalent to [/D:<Device name>] to
                                        be assigned when installing [MSCDEX.EXE]. It cannot be omitted.
                                        Note: The device name must be same as the device name in the
                                        MSCDEX Extensions line located in the AUTOEXEC.BAT file.

/Q
Quiet Switch (no error message "<A>bort, <R>etry") while initializing
driver.

/B
No reset to CD-ROM drive at boot configuration.
This option make invalid that Device Driver reset to CD-ROM drive at boot
sequence.

③ 5 Recognizing CD-ROM drive under Windows 95

Your CD-ROM drive will be recognized Automatically by Hardware installing only under IDE Hard Disk and Windows 95 operating system

If your CD-ROM drive is not recognized under unique system, start up **Hardware Wizard** (double_click on **Add New Hardware** icon in **Control Panel** window) under Windows 95

If, after this **Hardware Wizard** procedures, your CD-ROM drive still does not operate, consult your dealer

4 Guide to Operation

4 1 Installation
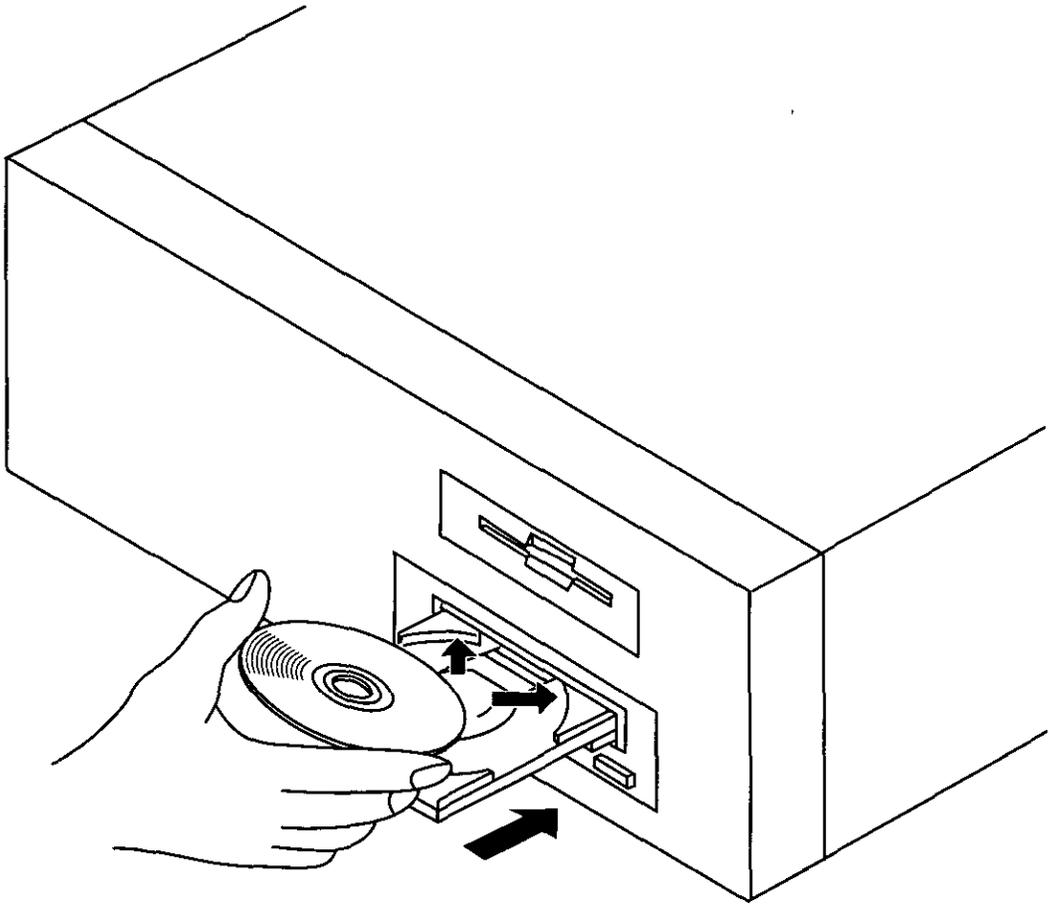
*This figure shows horizontal Installation

■ Starting the drive.

1 **Turn on your computer system.**

2 **Press the eject button. The tray will eject from the drive.**

3 **Place the disc in the tray with the disc's label facing up.**

4 **Press the eject button or push the tray. The tray will retract automatically.**

Note

- Do not insert any objects other than an audio CD and a CD-ROM disc into the disc tray
  This could result in a malfunction
- Do not manually force the tray to open or press down hard on the tray when loading a disc, since this may result in damage to or malfunction of the tray
- When the drive is not in use, keep the tray closed to protect it from dust and dirt

Min 1 3/4"
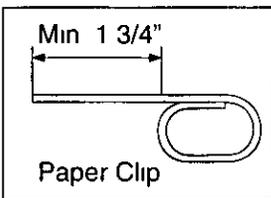
Paper Clip

In case of emergency and the unit is turned off, eject the tray manually
If for some reason the tray will not eject automatically, press straightforwardly the eject-bar (for example, insert a straightened paper clip minimum straight length = 1 3/4 inches, Diameter = 1~1 5 mm) into the emergency eject hole to manually eject the tray (Before proceeding with this emergency step, make sure that the main power is switched OFF)

5 Using Audio Utility "CD Listener"

CD Listener is a software application for playing music compact discs (CD), on a personal computer.

Note
CD Listener can be installed at the same time with the device driver of this equipment (CD-ROM Drive), using the automatic installation program **INSTALL.EXE**.

■ Preparation
To listen to music with **CD Listener**, you must connect headphones to your CD-ROM drive, or speakers to your sound board through amplifier.

• Headphone .... Connect through the headphone jack located on the front panel of the main drive unit.
Sound volume can be adjusted by the volume on the front face of your CD-ROM drive.

• Speaker with Amplifier
  and Sound Board .... Connect to an amplifier from the AUDIO OUT on your sound board connected to the CD-ROM drive through audio cable.

■ Operation of "CD Listener"

1 Insert the music CD in the CD-ROM Drive.

2 At the DOS prompt, type **CDLPC** and press <Enter>.

Note
When two or more CD-ROM drives are connected, specify the drive letter here.

Example:

```
Input drive letter that will be used for
audio CD-ROM drive name (D-E).
```

for DOS

■ Operation Screen

Track (Sequence of music)

Total number of tracks
(Total time)

Playing time   Operation status

Switch playing time display
* Total elapsed time   * Elapsed time of one track
* Total remaining time   * Remaining time of one track

Exit of **CD Listener**


```
Panasonic
Track    Elapsed CD Time    CD Listener Ver1.00
02       08:11                   TIME      POWER
Total Tracks: 12 (52:40)         ⊘          ⊕
Status     : Playing
```

```
STOP    PLAY    PAUSE   EJECT
 ■       ►       II      ▲
SKIP    TRACK   TRACK   SKIP
 ◄◄      |◄◄     ►►|     ►►
```

PLAY MODE
NORMAL

AUDIO OUT
STEREO

Switch
NORMAL/RANDOM play

Switch audio output
• STEREO   • RIGHT
• LEFT   • MUTE

STOP ■	Stop playing	SKIP ◄◄	Rewind approximately 10 seconds of play
PLAY ►	Play CD	TRACK |◄◄	Play from the beginning of the track
PAUSE II	Pause	TRACK ►►|	Jump to the next track
EJECT ▲	Tray eject	SKIP ►►	Fast forward approximately 10 seconds of play

6 Specification Summary

6 1 Performance

Disc diameter		12 cm, 8 cm	
Disc speed	1X Speed mode	200~530 r/min (Constant linear velocity)	
	24X Speed mode	4740~5530 r/min (Constant Angle velocity)	
Data capacity		656/748 MBytes typical (Mode 1/Mode 2) (74 min and 42 sec disc) 180/205 MBytes typical (Mode 1/Mode 2) (20 min disc)	
Data transfer Rate	Sequential (1X Speed mode)	150 kBytes/s (Mode 1)	
	Sequential (24X Speed mode)	1550~3600 kBytes/s (Mode 1)	
	From buffer	11 1 MBytes/s (PIO Mode 3 without IORDY) 13 3 MBytes/s (Multi-word DMA Mode 1) 8 3 MBytes/s (Single-word DMA Mode 2)	
Access time	Random access time*1 (1X Speed mode)		400 ms typical
	Random access time (24X Speed mode)		85 ms typical
	Fullstroke access time*2 (1X Speed mode)		630 ms typical
	Fullstroke access time (24X Speed mode)		160 ms typical
Buffer Size		128 kBytes	
MTBF		125,000 Power on hours (duty 20 %)	

Note

*1 Random access time   Average Data read over the complete area from 00 min 02 sec 00 blocks to 59 min 58 sec 74 blocks more than 2000 times including latency and layered error correction time

*2 Fullstroke access time   From 00 min 02 sec 00 blocks to 59 min 58 sec 74 blocks including latency and layered error correction time

6 2 Error Rates

Soft read errors	Less than 10^{-9}
Hard read errors	Less than 10^{-12}

6 3 Audio Performance

Number of channels	2
Frequency response	20 Hz~20 kHz, -3 dB~+0.5 dB (Line out) 100 Hz~20 kHz, -3 dB~+0.5 dB (Headphone)
SN Ratio	More than 80 dB (Line out)
Distortion	Less than 0.1 % (1 kHz) (Line out) Less than 0.2 % (1 kHz) (Headphone)
Output level Line-out Headphone	 0.8 Vrms 0.6 Vrms

6 4 General Performance

Power requirement	+5V $\overline{\overline{\cdots}}$ 1.0 A +12V $\overline{\overline{\cdots}}$ 0.8 A
Dimensions (W x H x D)	146 x 41.3 x 190 mm (exclude Front Bezel) (5.75 x 1.63 x 7.48 inches)
Weight	935 g (2.06 pounds)

6 5 Environmental Conditions

	Operating	Non-operating
Temperature	5~50 °C	-30~65 °C
Humidity	5~90 %Rh (Non-condensation)	5~95 %Rh (Non-condensation)

6 6 Laser Pick Up

Type	Semiconductor laser GaAlAs
Wave Length	790 ± 25 nm
Divergence	$\theta = 53.5° \pm 1.5°$
Output power	0.22 mW

CHAPTER 7 Troubleshooting

7 1 If Drive Does Not Operate

Most problems with CD-ROM drive operations are due to improper set-up or installation If your CD-ROM drive does not operate correctly, please check the following table for your problem, and the recommended solution

When this occurs	Possible cause	Take this action
The drive cannot be powerd on	Power cable has not been securely inserted into the receptacle at the back of your CD-ROM drive	Make sure the power cable is securely inserted into the receptacle on the back of your CD-ROM drive
The system cannot start up	The interface board is not completely connected, or incorrectly set up	Refer to your Interface Board Installation instructions to ensure proper connection
	The IDE Interface cable is incorrectly connected	Make sure the connector at both ends of cable are fully plugged in
The personal computer cannot recognize this equipment	Since the CD-ROM drive power is off when the computer performs its boot up sequence, the device driver has not been loaded	Reboot the computer after power on the CD-ROM drive
The tray cannot be ejected	The eject command has not been transmitted to the CD-ROM drive or to the Host Computer	If the CD cannot be ejected from the drive, carefully insert a straightened paper clip into the small hole to the right of the CD-ROM drive The CD will then eject
	The operating program inhibits ejection	End the program, or restart the system
CD-ROM disc cannot be read	CD-ROM was improperly placed (For example, the labelled surface is up-side-down)	Eject the CD-ROM, and reinsert the disc correctly
No sound is heard	Either the connection of the sound board/ amplifier is incorrect or the headphones/ sound board/ amplifier have not been connected to the CD-ROM drive	Check the connection Refer to the sound board/ amplifier instruction manual
	Volume is turned down	Increase the headphones or amplifier volume

If, after following these procedures, your CD-ROM drive still does not operate, please call the Panasonic Technical Support hotline at 1-800-PANASYS (1-800-726-2797) for assistance
This hotline is available, 24 hours a day, 7 days a week

Appendix A.

Manual Software Installation for DOS / Windows 3.1

If you have already completed installation using Easy Installation for DOS/Windows in Section③ 3, you do not need to use this section, which describes the manual installation procedure.

This section describes a method of installing the software without using the install program You must first create a sub-directory called **ATACR** on your hard disk drive All files on the floppy disk **(CD-ROM Drive Installation Software)** must be copied to the **ATACR** sub-directory You will also need to modify your **CONFIG. SYS** and **AUTOEXEC BAT** files using text editor software

① Open the file **CONFIG SYS**, using a text editor
If **CONFIG.SYS** does not exist, create a new file with this file name If you have no editor software, use the editor included with MS-DOS (EDIT COM) or PC-DOS (E EXE)

② Add the device driver of this equipment to **CONFIG SYS**

```
LASTDRIVE=Z
DEVICE=C:\ATACR\ATAPIMGR.SYS
         :
         :
DEVICE=C:\ATACR\SR_ASPI.SYS ⊔ /D:MSCD000
```

③ Save and close the modified **CONFIG.SYS**
If **AUTOEXEC BAT** does not exist, create a new file with this file name

④ Open **AUTOEXEC.BAT**

⑤ Add **C: \ATACR;** to the line starting with "PATH" in **AUTOEXEC.BAT**

```
PATH=C: \ATACR;
```

6 Add the following one line to the first line of **AUTOEXEC BAT**
(Installation of MS-DOS CD-ROM Extensions)

```
C: \DOS\MSCDEX.EXE ␣ /D: MSCD000 ␣ /M: 15 ␣ /V
```

[Example of input]

```
C:\DOS\MSCDEX.EXE ␣ /D: MSCD000 ␣ /M: 15 ␣ /V
@ECHO OFF
SET COMSPEC = C \DOS\COMMAND COM
PROMPT $P$G
PATH=C \DOS, C: \ATACR,
SET TEMP = C \DOS
```

7 Save and Close the modified **AUTOEXEC.BAT**

8 Exit the editor

9 Restart your personal computer Check that the device driver of this equipment has been installed during the start up
Every time DOS is started, the device driver of this equipment will be automatically installed

■ Installing Audio Utility "CD Listener" for DOS (Manual)

Copy **CDLPC EXE** on the floppy disk to sub-directory **C:\ATACR**

Appendix B.

Recognizing CD-ROM drive under OS/2 Warp 3 or Warp 4

Your CD-ROM drive will be recognized Automatically by Hardware installing only under IDE Hard Disk and OS/2 Warp 3 or Warp 4 operating system

Installing OS/2 and the device driver for OS/2 Ver. 2.1, 2.11

Before you begin installing OS/2, the LK-MC686BP should be installed in your host computer system and DOS loaded

Use the installation program INSTOS2 EXE on the Panasonic LK-MC686BP installation disk provided to create a Panasonic LK-MC686BP Install disk for OS/2 This disk will be used to replace the original OS/2 Disk 1 Have a blank, formatted, 2HD floppy diskette ready, as you will need this during the disk creation process

Note

If OS/2 has already been installed, you will still need to create a PANASONIC LK-MC686BP INSTALLATION DISKETTE in advance, then complete steps ❾ - ⓭

❶ Turn the power of your personal computer on
If your system automatically loads Windows, you must exit Windows and return to the DOS prompt
C \
The installer assumes that your floppy drive is designated "A" and your hard disk drive "C"
If, however, you have used other letters to designate your drives, please substitute the appropriate letters

❷ Insert the "CD-ROM Drive Installation Software" disk into your floppy disk drive
Type **A** and press <Enter>
The current drive changes to "A"

❸ Type **INSTOS2** and press <Enter>

❹ When the message shown at left is displayed, insert the "OS/2 Diskette 1" that is included with the OPERATING SYSTEM "OS/2" and press <Enter>

Exchange the "OS/2 Diskette 1" and press <Enter>

```
┌─────────────────────────────────┐
│                                 │
│  Creating "ATAPI CD-ROM         │
│  Installation Diskette"         │
│  Insert new floppy diskette/2HD into │
│  drive and press <Enter>        │
│                                 │
│                                 │
└─────────────────────────────────┘
```

⑤ When the message shown at left is displayed, insert a blank 2HD floppy diskette and press <Enter> Follow the messages that are displayer

```
┌─────────────────────────────────┐
│                                 │
│  Installation Diskette is newly │
│  created                        │
│                                 │
│                                 │
│                                 │
└─────────────────────────────────┘
```

⑥ The message shown at left will be displayed When you install "OS/2" system, use the created diskette in place of the "OS/2 Diskette 1" and return your original OS/2 diskette to a safe place

⑦ Eject the floppy diskette in the drive and insert the "OS/2 Installation Diskette" into the floppy diskette drive, and set the OS/2 CD-ROM into the "LK-MC686BP CD-ROM DRIVE" and press

```
┌─────────┐     ┌─────────┐     ┌─────────┐
│  Ctrl   │  +  │  Alt    │  +  │ Delete  │
└─────────┘     └─────────┘     └─────────┘
```

Start installing the "OS/2"
Following the messages, use the "Panasonic LK-MC686BP Installation Diskette" which was created in step 6, in place of the "OS/2 Diskette 1" and install the "OS/2"
For the OS/2 Ver 2 11, installation of the DEVICE DRIVER is also completed simultaneously here
For the OS/2 Ver 2 1, proceed to the installation according to the procedures after step 8

⑧ When the installation of "OS/2" is completed, your personal computer will restart automatically from the hard disk

OS/2 System
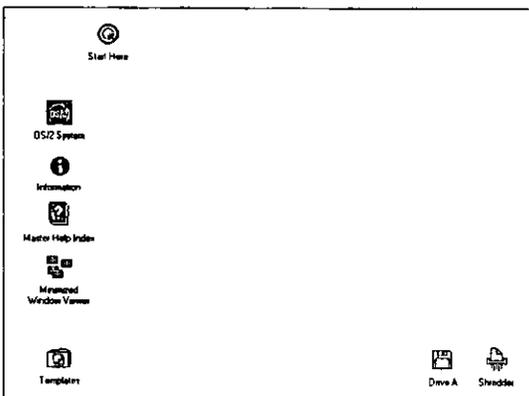
9 Open the "OS/2 System"

System Setup

10 Open the "System Setup"

Device Driver Install

11 Open "Device Driver Install"

OS/2 2 1 Device Driver Installation
┌─Source directory───────────
A \
Change
┌─Destination directory───────
C \
Change
Install   Exit   Help

12 Insert the "Panasonic LK-MC686BP Installation Diskette" disk and click [Install]

13 Select the "Panasonic CD-ROM attached to IDE (ATAPI) interface" and click [OK]
Following the messages on the screen, complete the installation
When the message is finished, restart the personal computer
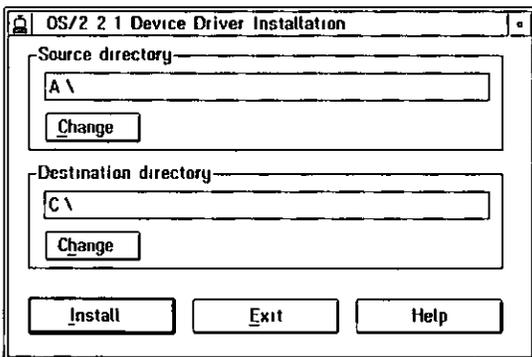
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