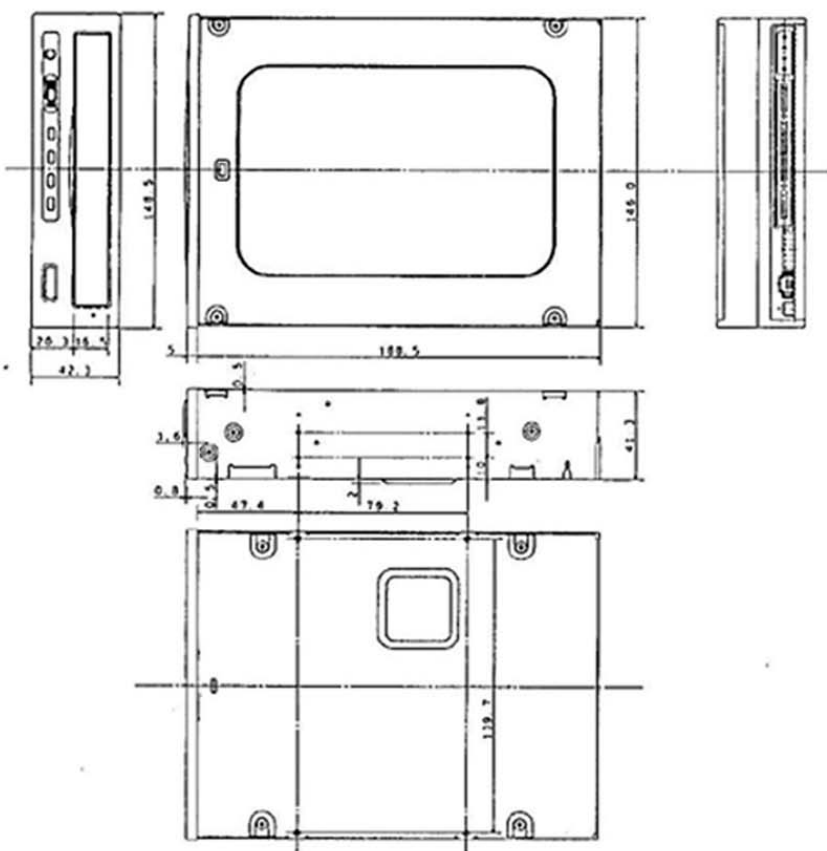


Dimensions



Unit: mm

- Use screws 3 mm in diameter and 4 ± 0.5 mm in length.

Internal CD-RW Drive

CRD-BP4

OWNER'S MANUAL

FCC Compliance Statement

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. Operation is subject to the following two conditions. (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation. These limits are designed to provide reasonable protection against harmful interference in residential installations. 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.
- Move the equipment away from receiver.
- Plug the equipment into an outlet and circuit different from that which powers the receiver.
- If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

CAUTION:

Use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.

The equipment should not be adjusted or repaired by anyone except qualified service personnel.

Any changes or modifications to the equipment by the user not expressly approved by the manufacturer could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

LE PRÉSENT APPAREIL NUMÉRIQUE N'ÉMET PAS DE BRUITS RADIOÉLECTRIQUES DÉPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMÉRIQUES DE CLASSE B PRÉSCRITES DANS LE RÉGLEMENT SUR LE BROUILLAGE RADIOÉLECTRIQUE ÉDICTÉ PAR LE MINISTÈRE DES COMMUNICATIONS DU CANADA.

NOTE: Locate serial number (shown on top plate of unit) and record it here → _____

We greatly appreciate your purchase of the CD-RW Drive. To ensure proper use, please read this manual carefully before using the unit. Also refer to the manual of your personal computer.

CAUTION

1. Unauthorized reproduction of this manual in whole or in part is prohibited.
2. The contents of this manual are subject to change without notice.
3. Please contact Sanyo should you find any errors in this manual or should you have any comments.
4. Note that Sanyo will not accept responsibility for any problems resulting from the use of application software.

IBM, IBM PC and PC/AT are registered trademarks of International Business Machines Corporation of the United States.
MS, Microsoft, MS-DOS and Windows are registered trademarks of Microsoft Corporation of the United States.
Intel 486™ Processor is a registered trademark of Intel Corporation of the United States.
Adaptec and the Adaptec logo are registered trademarks of Adaptec, Inc.
AHA is a trademark of Adaptec, Inc.

Table of Contents

About the CD-R Drive	5
PC Operating Environment	6
Part Names and Functions	7
Installation	11
Installing on the Personal Computer	11
Installing the Device Driver	17
Connecting to an Audio Set	18
Operation	19
Loading Discs	19
Removing Discs	20
Cautions on Use	21
Cleaning	22
Cautions on Handling Discs	22
Specifications	23
Dimensions	24

About the CD-R Drive

The CD-R (Compact Disc-Recordable) drive is a device for converting the data from the personal computer and storing it on CD-R discs. The internal encoder converts the data transferred from the personal computer into CD format and records it on the CD-R disc.

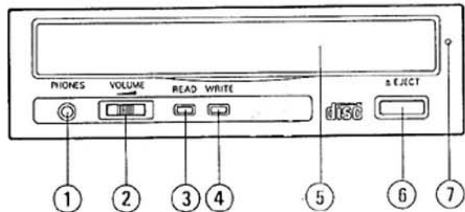
CDs made using this CD-R drive conform to the physical and logical standards for all types of CDs. As such, CDs made using this CD-R drive can be played on commercially available CD players and CD-ROM drives.

PC/AT compatibles

- For the CPU, use an Intel 486™ Processor SX/33 MHz or later.
 - Use PC-DOS 6.3/V or MS-DOS 6.2/V and Windows 3.1/95.
 - Use a personal computer with a memory of 8 MB or greater (16 MB or greater recommended).
- Normal recording is possible with an empty XMS memory of 4 MB or greater after starting Windows 3.1/95.
- About 50 MB of empty space is required on the hard disc for on-the-fly recording.

When recording after creating an image file, sufficient capacity and work area for recording the image file is needed. For example, to fully record a 74-minute disc (with a 650 MB capacity), 700 MB or more of space is necessary on the hard disc considering the work area.

Front Panel



- ① **Headphones jack (PHONES)**
Connect headphones with a stereo mini-plug here.
- ② **Headphones volume control (VOLUME)**
Use this to adjust the volume of the headphones connected to the PHONES jack. Turn clockwise to increase the volume.
- ③ **Read indicator (READ)**
This indicates the reading (playback) mode.
When lit: Disc being read or accessed
When flashing: TOC being read
When off: Pause or stop mode
- ④ **Write indicator (WRITE)**
This lights when data is being written (recorded).
- ⑤ **Disc tray**
Set the disc here. Press the EJECT button to open and close the tray.

⑥ Eject button (EJECT)

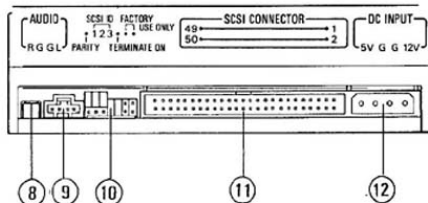
Press this to load or eject the disc.

Note that this button will not function during recording or when a prohibit command is received from the personal computer.

⑦ Emergency eject hole

Use this to forcibly remove a disc should the EJECT button not function due to power failure or software problems. For details, refer to "Removing Discs in Emergencies".

Rear Panel



⑧ Ground terminal (GND)

Use this when the CD-R drive does not directly touch the personal computer's metal frame. Connect the ground cable between this terminal and the personal computer's metal frame.

⑨ Audio connector (AUDIO)

Audio signals are output from this connector. Use this when a sound port compatible with this connector is installed on the personal computer.

⑩ Jumpers

⑪ SCSI CONNECTOR

Connect this to the SCSI connector of the SCSI board installed on the personal computer using a 50-pin flat SCSI cable. The "1" mark indicates pin number 1. Connect the SCSI cable with the colored wire next to this "1" mark.

⑫ DC connector (DC INPUT)

Connect the personal computer's DC power cable here.

Installing on the Personal Computer

Preparations

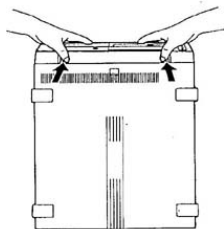
- Turn off the personal computer's power and for safety disconnect the power cord.
- Disconnect all the cables for peripheral devices from the personal computer.
- Remove the personal computer's cover.
- Remove the drive bay cover on the front panel of the personal computer.

For disconnection procedures, refer to the personal computer's owner's manual.

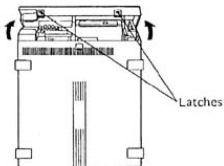
Here we describe how to install the CD-RW drive on Sanyo personal computer.

Removing the cover

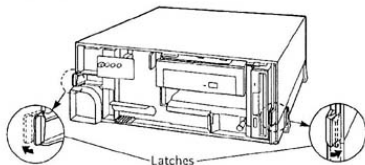
1. Set the personal computer so that the front panel is at the top, then press on the front panel's latches with your thumbs.



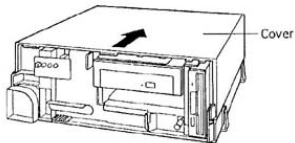
2. Still pressing the latches, remove the front panel.



3. Press the latches on the sides of the personal computer outwards.



4. With the latches pressed outwards, push the cover towards the rear panel and remove it.

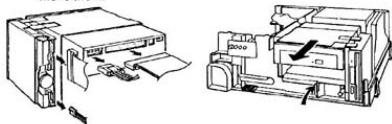
**NOTE:**

On some personal computers the cover is attached with screws. In this case, remove the screws to remove the cover.

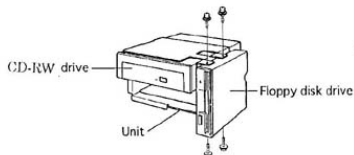
Removing the floppy disk drive**NOTE:**

On some personal computers the CD-RW drive can be installed without removing the floppy disk drive. Here we describe how to remove the floppy disk drive if necessary.

1. Remove all cables connected to the floppy disk drive and CD-RW drive. Mark the cables as you remove them.
2. Press in the direction of the arrow and remove the floppy disk drive and CD-RW drive units.

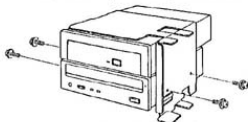


3. Remove the four screws, then remove the floppy disk drive from the unit. Keep the screws.

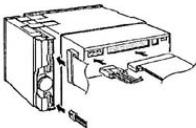
**Mounting the CD-RW drive on the unit**

1. Have four screws ready. Use screws 3 mm in diameter and 4 ± 0.5 mm in length. Here are 12 screw holes on the CD-RW drive. Refer to the dimensions diagram.
2. Insert the CD-RW drive into the empty drive bay.

3. Fasten the CD-RW drive in place using the screws.

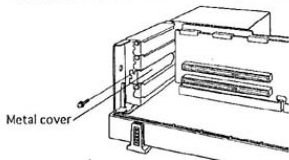


4. Remount the floppy disk drive using the same screws as before.
5. Fasten the unit onto which the CD-RW drive has been mounted onto the personal computer.
6. Connect the cables to the floppy disk drive and CD-RW drive as before.



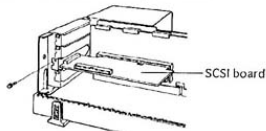
Installing the SCSI board

1. Find the open expansion slots inside the personal computer.
2. Choose the expansion slot into which insert the SCSI board.
3. Remove the screws from the selected expansion slot's metal cover, then remove the metal cover. Keep the screws.



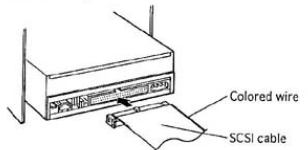
4. Touch a metal part of the personal computer to discharge any static electricity.

5. Hold the SCSI board by both ends and insert it straight into the expansion slot. Use the screws removed from the metal cover to fasten the SCSI board in the expansion slot.



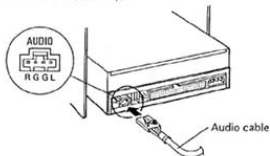
Connecting the SCSI cable

1. Connect the SCSI cable to the CD-RW drive. Connect the SCSI cable in such a way that its colored wire is next to the "1" mark on the SCSI connector. Insert the SCSI cable firmly.

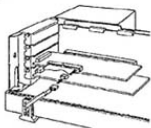


Connecting the audio cable

1. Install the sound board in an expansion slot.
2. Connect the audio cable to the CD-RW drive. Insert the audio cable firmly.

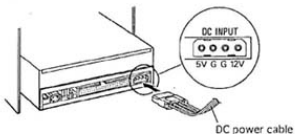


3. Insert the audio cable into the audio connector on the installed sound board.



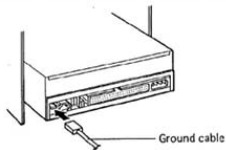
Connecting the DC power cable

Insert the DC power cable from the personal computer into the CD-RW drive DC connector.



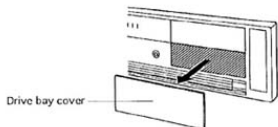
Connecting the ground cable

Use the ground cable when the CD-RW drive does not directly touch the personal computer's metal frame. Connect the ground cable between this terminal and the personal computer's metal frame.



Installation is now complete.

- Reinstall the personal computer's cover as before.
- Cut out the drive bay cover on the front panel of the personal computer, then reinstall the front panel as before.



NOTE:

Installation differs depending on the type of personal computer. Follow the instructions in the personal computer's owner's manual to install the CD-RW drive in an empty drive bay.

Installing the Device Driver

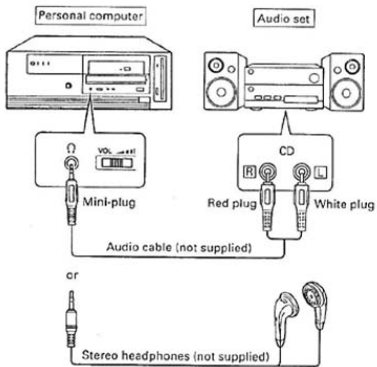
The CD-R drive's device driver must be installed in order to use the CD-RW drive. Follow the instructions in the "Installation Manual" of the device driver included with the SCSI board to install the device driver.

Connecting to an Audio Set

To play CDs through a stereo amplifier

Connect the cable's stereo mini-plug to the CD-RW drive PHONES jack.

Connect the cable's white plug to the amplifier's CD L (left) jack, the red plug to the R (right) jack.



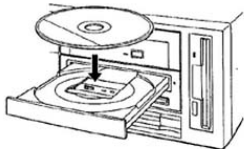
Before using the CD-RW drive check that the CD-R drive's device driver has been installed on the personal computer.

Loading Discs

1. Turn on the power of the personal computer on which the CD-RW drive is installed.
2. Press the EJECT button. The disc tray opens.



3. Load the disc in the center of the disc tray, with the printed side facing up.



4. Press the EJECT button. The disc tray closes.
5. Play the disc. The READ indicator flashes while the TOC (table of contents) is being read, then turns off. The indicator lights during playback. Record data on the disc. The WRITE indicator lights while data is being recorded.

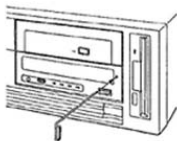
Removing Discs

1. Check that all the indicators are off.
2. Press the EJECT button to open the disc tray.
3. Remove the disc.
4. Press the EJECT button to close the disc tray.

Removing Discs in Emergencies

Use the following procedure to forcibly remove a disc should the EJECT button not function due to power failure or software problems.

1. Get a steel paper clip or the like.
Straighten the paper clip.
2. Insert the paper clip into the emergency eject hole and push in with force. The disc tray pops out.
3. Pull the disc tray out and remove the disc.
4. Push the disc tray back in.



⚠ CAUTION!

- **Do not look directly at the laser beam.**
Looking directly at the laser beam may result in loss of vision.



- **Do not use warped or cracked discs.**
Do not use cracked or warped discs or discs that have been repaired with glue. Discs turn at high speeds inside the drive, so cracked, warped or repaired discs may break apart and fly out, resulting in injury.



- **Do not touch internal parts.**
Do not take the drive apart or attempt to modify it. Doing so may damage it.



- **Do not touch connectors.**
If the CD-RW drive connectors are touched, grease or static electricity from your fingers may result in faulty contacts or malfunction. Also be careful not to touch the personal computer's connectors when connecting or disconnecting cables.



- **Do not connect and disconnect cables repeatedly.**
Doing so will place excessive loads on the connectors and may damage them. Only connect and disconnect cables when necessary.

To prevent damage:

- Do not subject to shocks or vibrations.
- Do not let liquids, metal objects or other foreign substances get inside the drive.
- Do not use the drive at a slant.
- Do not move the drive with a disc inside it.

Place of use

- Avoid using the drive in the following types of places:
 - Places subject to high temperatures or rapid temperature changes
 - Places exposed to direct sunlight
 - Places where vibrations are strong
 - Non-level surfaces

Cleaning

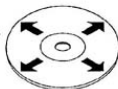
- To clean dirt off the drive, wipe gently with a soft, dry cloth or a cloth to which water or a diluted neutral detergent has been applied.
- Note that using benzene, thinner or other volatile chemicals could result in deformation or discoloration.

Cautions on Handling Discs

- Hold discs in such a way as to not touch the side on which nothing is printed.



- Do not write or stick pieces of paper or labels on discs.
- Use a soft cloth to wipe dust, dirt or fingerprints off the side of the disc on which nothing is printed.
- When wiping discs, always do so starting from the inside and moving towards the edge.



- Do not use benzene, thinner, analog record cleaners or anti-static agents on discs. Doing so may damage them.
- Store discs in their cases.
- Do not set discs in places exposed to direct sunlight or high temperatures.

Discs

Recording:	CD-R discs (conforming to Orange Book standards, Part 2)
Playback:	CD-ROM, CD-ROM XA and CD-DA discs
Diameter:	12 cm or 8 cm
Linear speed:	1.2 m/s to 1.4 m/s

Recording/playback speed

Recording:	Normal and double speed
Playback:	Normal, double and quadruple speed

Signal transfer rate

Normal speed :	150kB/s		
X2 speed :	300kB/s	X8 speed :	1200kB/s
X4 speed :	600kB/s	X12 speed :	1500kB/s
		X16 speed :	2400kB/s

Connectors

Interface connector:	50-pin,
DC connector:	4-pin, +5V, +12V
Audio connector:	4-pin

Audio

Output terminal:	3.5 mm stereo mini-jack
Output level:	70 mV (1 kHz, -20 dB)

Loading method: Tray loading

Dimensions: (WxDxH) 146 x 188.5 x 41.3 mm

Weight: 1040 g

- Note that for improvement purposes, specifications and design are subject to change without notice.