

DVD+RW Drive DRU110A

User's Manual

To view this manual, use the following browsers

- Microsoft Internet Explorer 4 or later
- Netscape Communicator 4 or later

NOTICE

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 communication. 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.

Warning as to USE

This CD-RW & DVD+RW drive together with its bundled software is a product for using rewritable, erasable, and readable CD-R/RW&DVD+RW disc media. Copying or reproducing commercial CD-ROM or any other copyrighted materials is against the copyright laws and prohibited unless specifically permitted by the copyright laws (including the case of personal use), or unless you have obtained permission to do so from the rightholder.

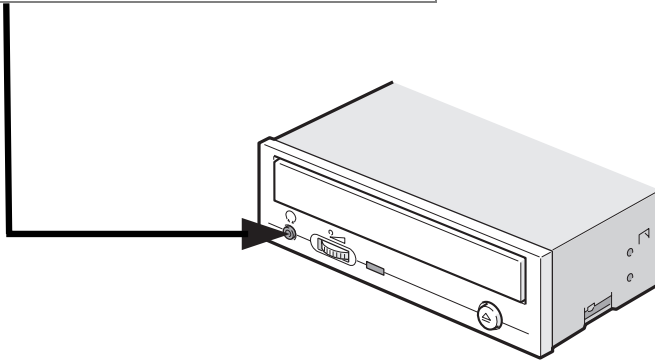
This PDF is for printer output use. Please see the HTML Manual for details of each link.

CAUTION

Rating voltage for peripherals.

1. Headphone Jack

Rating Voltage output Audio Signal Max.

**FCC WARNING**

Changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CAUTION

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

Lower a volume

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

The volume that exceeds 70 dB occurs and the obstacle sometimes breaks out.

**Declaration of Conformity**

"The Product complies with the requirements of the EMC Directive 89/366/EEC and the **Low Voltage Directive 73/23/EEC.**"

- Please take notice that the manufacturer of this equipment does not offer any warranty against data loss due to inappropriate installation or handling, or direct or indirect damages.
- Please take notice that the manufacturer will bear no responsibility for direct or indirect damages caused by the use of this product or its malfunction.
- Please take notice that the manufacturer will bear no responsibility for damage to data caused by this product.
- Please backup (copy) all important data as protection against data loss.

- PC DOS is a trademark of IBM Corporation.
- MS-DOS, Windows, Windows® 98, Windows® 2000 and are trademarks registered in the United States and other countries by Microsoft Corporation.
- B's Recorder GOLD and B's CLiP is a trademark of BHA Corporation.
- WinDVD is a trademark of InterVideo Inc.
- Acrobat reader is a trademark of Adobe System Inc.
- The company names and product names written in this manual are trademarks or registered trademarks.

Conventions

This manual uses the following symbols to indicate important information relating to the drive.



Failing to comply with the information in this manual and/or incorrect handling of the drive may result in serious personal injury or damage to the product.



Indicates restriction or precaution that should be observed.



Provides useful additional information.

Introduction



This manual contains important notes and product handling information. Be sure to read the manual before using the product. For easy reference in the future, please keep the manual at a handy location.

Thank you for purchasing Sony DVD+RW Drive DRU110A (hereafter referred to as "the drive"). The drive allows you to play DVD-ROM discs, write to, play, and edit DVD+RW discs, play CD-ROM discs, write to and play CD-R discs, write to, play, and edit CD-RW discs that are rewritable.

In order to operate the drive connected with your computer, you need some writing software. For information about necessary items for connecting with a computer and about the software you use, refer to the documentation of the software.

The following marks indicate media that can be used with the drive.



The characteristic of DRU110A

- The drive is a super-combination drive that integrates DVD+RW and CD-RW capabilities with Sony's expertise for existing CD-RW and DVD-ROM drives.
- DVD writing has been made possible by tuning up a two-LD (laser diode) one-lens pick-up that has one laser diode for CD and another for DVD.
- With the analog front-end processor LSI for controlling pick-up, seek, and servo mechanisms, as well as the digital controller LSI for controlling encoding/decoding, both of which are newly developed, 2. 4x-speed DVD writing which requires even more precise control has been achieved.
- The "radial-tilt correction mechanism" incorporated in the drive senses the disc warpage and inclination and thereby corrects the laser angle so that the laser is always directed toward the disc surface at the right angle. (It functions only when writing to or playing DVD.)
- A high-precision stepping motor is incorporated. This enables precise seeking even on DVD+RW with a narrow track pitch, and achieved reduction of operating noise.
- As a CD-RW drive, it provide the performance of 12x CD-R write, 10x CD-RW rewrite, and 32x CD-ROM/R/RW read speeds.
- As a DVD-ROM drive, it provides a performance of 8x read speed.

Obey the following cautions when handling the drive or discs.

● Cautions During Installation

- Install the drive in accordance with the specifications. Be careful to avoid locations likely to cause vibration or shock.
- Avoid locations where there is high humidity, excessive dust, or poor ventilation.
- Avoid locations in direct sunlight, with severe changes in humidity, or places where there are extremely high or low temperature variations.
- Don't use the drive near radio or television receivers. It may interfere with their reception.
- Do not disassemble the drive. Dismantling the drive to attempt repairs or for other reasons is dangerous because the laser may radiate outside the unit.

● Cautions During Use

- DVD-R/RW (DVD minus R/RW) disc media cannot be used.
- Don't suddenly move the drive from a cold place to a warm place, or suddenly raise the room temperature. Condensation may occur, causing abnormal operation.
- Make sure to remove the disc before moving the drive. The disc may be damaged, causing data loss.
- Be careful to prevent foreign objects such as liquids or metal from entering the drive. Should by chance a foreign object enter the drive, please consult the dealer where the drive was purchased.
- Don't use benzene or thinner to clean dirt from the drive. Don't allow chemicals such as insecticides to contact the drive. Use a soft cloth to wipe the drive, or moisten a cloth with neutral detergent diluted with water and use it to clean particularly dirty areas.
- Don't cutoff the electric power while the drive is operating.
- When connecting two E-IDE devices to the Primary or Secondary connectors, make sure that the two devices are not both configured as Master, or both as Slave. If they are both set the same, Windows may fail to run or recognize the drives.
- The total length of the E-IDE cable should be less than 18 inches (about 45 cm).
- Make sure the power to the host computer is turned OFF before connecting.
- Never insert a damaged disc into the drive.
- In wintertime, don't use a disc soon after bringing in from outdoors. Use it only after it has reached room temperature.

● Cautions Concerning Disc Cleaning

- Remove the disc by pressing the eject button.
- Use compressed air to clear dust from the disc. (Spray the compressed air for about 5 seconds).
- Check to see if there is dirt on the surface of the disc. Be careful not to touch the disc with the fingers when doing this. ([See Fig. 1](#))
- After cleaning the disc with compressed air, place it on the disc tray and mount it. ([See Fig. 2](#))
- We suggest using dry air cleaner as compressed air for cleaning.

● Other Cautions

- When moving the equipment, make sure that the disc has been removed from the drive.
 - When connecting connectors, make sure that the power is OFF. If the power is ON, there is a possibility of short circuit.
 - When not using the drive for a long period, dust may adhere to the disc tray. Before using the drive again, use dry air cleaner to remove the dust from the tray.
 - Do not use any commercially available cleaning kit, because such a kit may damage the drive.
-

fig1

1. Check
2. Recording surface

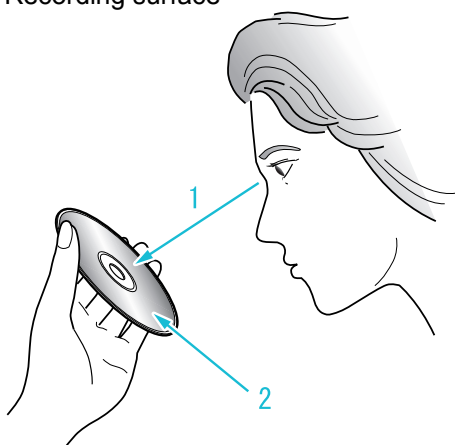
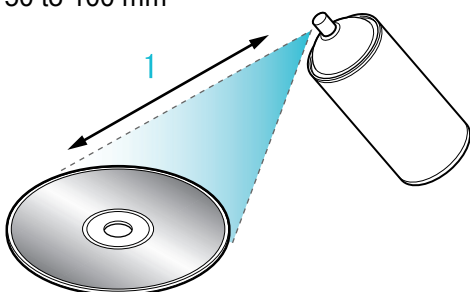


fig2

1. 50 to 100 mm



Features

- The drive is a super-combination drive that integrates DVD+RW and CD-RW capabilities with Sony's expertise for existing CD-RW and DVD-ROM drives.
- DVD writing has been made possible by tuning up a two-LD (laser diode) one-lens pick-up that has one laser diode for CD and another for DVD.
- With the analog front-end processor LSI for controlling pick-up, seek, and servo mechanisms, as well as the digital controller LSI for controlling encoding/decoding, both of which are newly developed, 2.4x-speed DVD writing which requires even more precise control has been achieved.
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- As a CD-RW drive, it provide the performance of 12x CD-R write, 10x CD-RW rewrite, and 32x CD-ROM/R/RW read speeds.
- As a DVD-ROM drive, it provides a performance of 8x read speed.
- **Features buffer under-run errors protection technology.**
- An improved anti-heat design means that no cooling fan is needed.
- Easy-to-use tray model.
- Enhanced-IDE (ATAPI) model
- Compliant with industry standard Orange Book Part II (CD-R) and Part III (CD-RW).
- Can read not only CD-R and CD-RW discs, but also video CDs, music CDs, photo CDs^{*1}, and CD-Text
- The recorded CD-RW media can be played in a DVD player or a multi-read CD-ROM Player, maintaining future compatibility.
- Supports random UDF for easy writing to CD-RW discs.
- UDMA-capable

*1 Bundled software does not support this writing format.

System environment

Explains the system environment required for using the drive as a DVD+RW/CD-RW drive.

PC	IBM PC/AT compatible		
Operating System	Windows 98 Second Edition Windows Millennium Edition Windows 2000 (Professional)		
CPU	Pentium II/400 MHz or higher recommended. * DVD authoring software (My DVD) requires Pentium III/550 MHz or higher. (Pentium III/800 MHz or higher ^{*3})		
Memory	64MB or more recommended. * DVD authoring software (My DVD) requires 128MB or more.		
Hard disk	1GB or more free space * DVD authoring software (My DVD) requires 10GB or more free space.		
Interface	Must be Enhanced-IDE compatible. In addition, its Primary Slave, Secondary Master, or Secondary Slave must be blank.		
Drive bay	The system unit must have a blank 5.25-inch bay.		
Power	The computer system unit must have a blank +5V/+12V power terminal.		
Recommendation discs ^{*2}		Recommendation	Tested to be compatible
	CD-R	Sony	Ricoh, Taiyo Yuden, Mitsui Chemicals, Mitsubishi Chemical, Maxell
	CD-RW	Sony	Ricoh, Mitsubishi Chemical ^{*1}
	High Speed CD-RW	Sony	Ricoh, Mitsubishi Chemical
	DVD+RW	Sony	Ricoh, Mitsubishi Chemical

*1 The disc written using the CD-R/RW drive may not be readable by CD-ROM drives. Multi-read compatible (Random UDF compatible) drives are necessary.

*2 **Even if it is the recommendation disc, some of discs may have possibility to fail writing with highest writing speed with the problem on the disc. In this case, please try to write with lower writing speed, or please try to use another disc.**

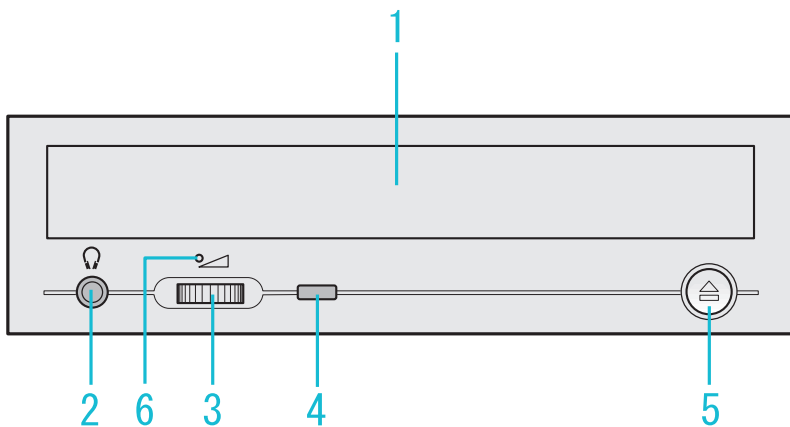
*3 Recommended when Direct-to-DVD capability is being used.



Multi-read compatible (Random UDF compatible) drives are:

- Drives that can read low reflectivity discs.
- Drives that support Packet Write.

Front Panel



1. Disc tray

This is the tray for the disc. Place the disc on the ejected disc tray, then lightly push the tray (or push the eject button) and the disc will be mounted.



Caution

Don't use force to pull out or push in the disc tray. This might cause damage to the loading section of the drive.

2. Headphone jack

This jack is for connecting headphones or mini-speakers.

3. Volume control

This is used to adjust the output volume of the headphone jack. It can't be used to adjust the output volume for the audio output connectors on the rear panel.



Caution

Turn the volume down before turning on the power. Sudden loud noises can damage your hearing.

4. Busy indicator

This indicator lights orange when a disc is mounted into the drive. When the disc is being accessed, it flashes or lights orange. If a disc is not mounted, the indicator does not light even when the power is turned on. When an illegal disc is loaded or some hardware trouble occurs, the indicator blinks.

5. Eject button

This is the button used to eject or insert in the disc tray.

6. Emergency eject hole

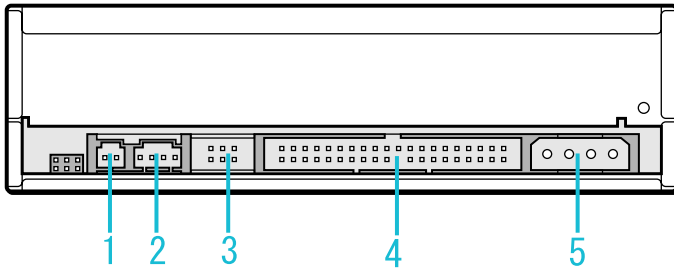
This drive has a function that allows the disc to be ejected manually for an emergency case such as failure of the drive or a power outage.



Caution

This feature is a last measure to be used only in an emergency. Using it excessively will cause malfunction.

Rear panel



1. Digital Audio (SPDIF) Output Connector

Provides output to a sound card (Digital signal).
* No digital audio cable is included with the DRU110A.

2. Analog Audio Output Connector

Provides output to a sound card (Analog signal).

3. Jumper Connector

This jumper determines whether the drive is configured as a master or slave. Changing the master-slave configuration takes effect after power-on reset.

4. IDE Interface Connector

Connect to the IDE (Integrated Device Electronics) interface using a 40-pin flat IDE cable.



Caution

Do not connect or disconnect the cable when the power is on, as this could cause a short circuit and damage the system. Always turn the power OFF when connecting or disconnecting the cable.

5. Power Connector

Connects to the power supply (5 and 12V DC) of the host computer.



Caution

Be careful to connect with the proper way.
Connecting the wrong way may damage the system (and is not guaranteed).

Installing the Drive



Specific knowledge of hardware and software is necessary to install the drive. We cannot guarantee against direct or indirect damage resulting from improper connections. Ask your supplier for details of the installation procedure.

Before Installation

Before installing the drive, please note the following points.

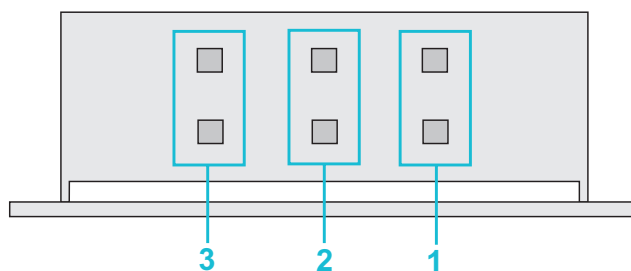
- You will need the following:
 - A Phillips head screw driver of a suitable size to fit the securing screws for the drive unit.
 - The manual for the computer, to know the location of the IDE connector.
- Turn off all peripheral devices of the computer, and the computer itself, and disconnect their power cords from the wall sockets.
- Discharge any static electricity by touching the computer covers etc.
- Before installing the drive, be sure to read the following cautions and information on preparation. Keep a serial number label at the location specified by "Quick Start Guide".

Installing the Drive

1. Jumper Set Up
2. Removing the Computer Cover
3. Mounting the Drive
4. Connecting the Power Connector
5. PC Connections
6. Sound Card Connection
7. Replacing the Computer Cover
8. Device Drivers

1. Jumper Set Up

Before installation, set the jumper on the jumper connector on the rear panel.



1. Master (MA)

Drive set as Master (factory default)

2. Slave (SL)

Drive set as Slave

3. Cable Select (CS)

Drive mode set by CSEL on the host IDE interface

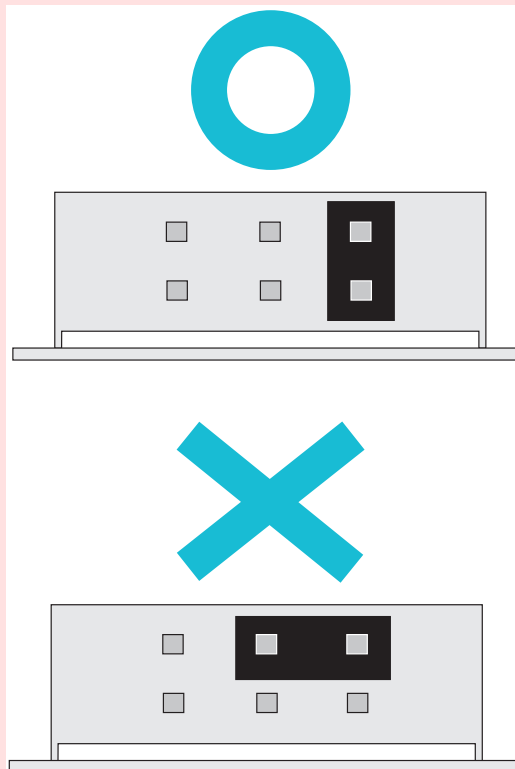


- The drive can be connected as the Master or Slave on an E-IDE (ATAPI) interface.
- When several (up to four) E-IDE devices are connected, each must be set in a unique way.
- A hard disk is normally installed as the Primary Master on the E-IDE (ATAPI) interface. Other E-IDE peripheral devices such as hard drives and CD-ROMs are then set accordingly.



Caution

- If two peripheral devices with the same settings are both connected to the Primary or to the Secondary E-IDE bus, the host computer may fail to run, or may malfunction, so careful attention is necessary.
- Make sure that the host computer is turned OFF when connecting or removing a jumper.
- Must be connect the jumper in the vertical direction. If connected horizontally, the drive may malfunction or be damaged.



- Only one jumper should be installed on the jumper connector. If more than one jumper is installed, the drive may malfunction or be damaged.

2. Removing the Computer Cover

Make sure all peripheral devices of the computer and the computer itself are turned off, and then remove the cover.

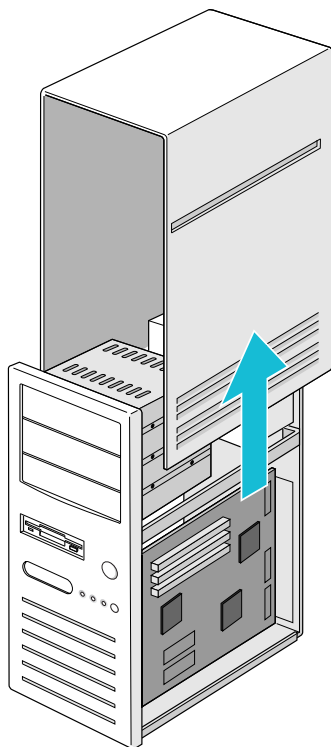
Refer to the manual for the computer for details about removing the cover.



Caution

There may be sharp edges inside the computer take care to avoid injury.

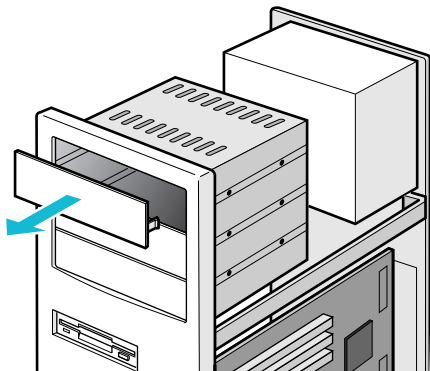
(Example: When newly installing the DRU110A drive into a PC.)



3. Mounting the Drive

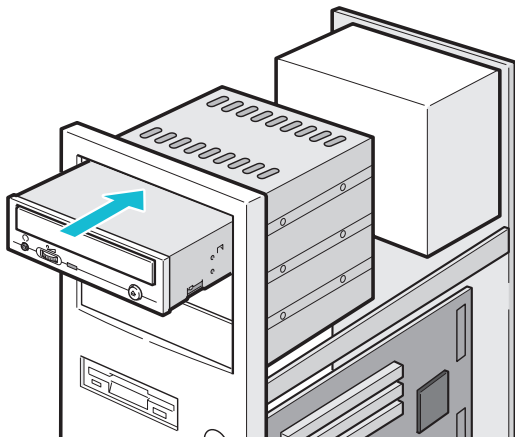
1. Remove the 5 inch drive bay panel from the computer.

Refer to the manual for the computer for details.



2. Insert the drive unit into the bay.

Do not apply excessive pressure to the cables inside the computer.



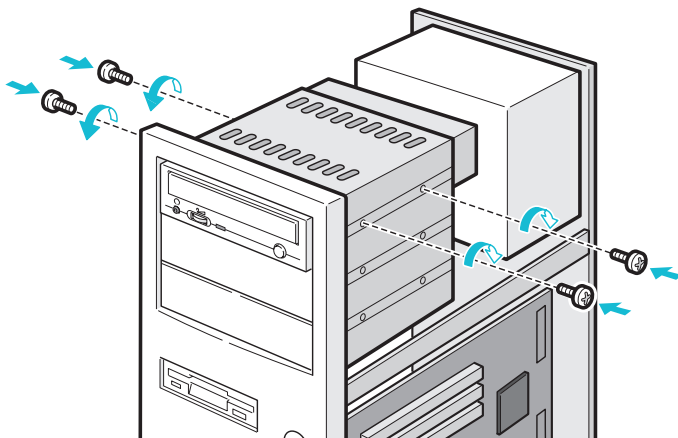
3. Secure the drive with the screws provided.

If there is not enough space behind the drive, connect the E-IDE cables etc. before securing the drive.



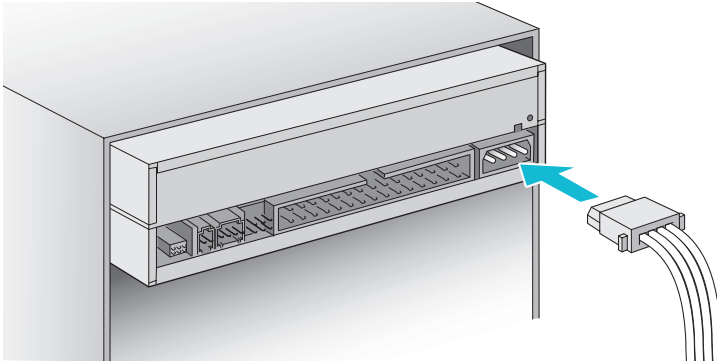
Caution

Be aware that some computers do not require all of the four mounting screws for securing the drive.



4. Connecting the Power Connector

Connect the power cable from the computer's power supply to the socket on the drive unit, fitting the connector properly into the socket.

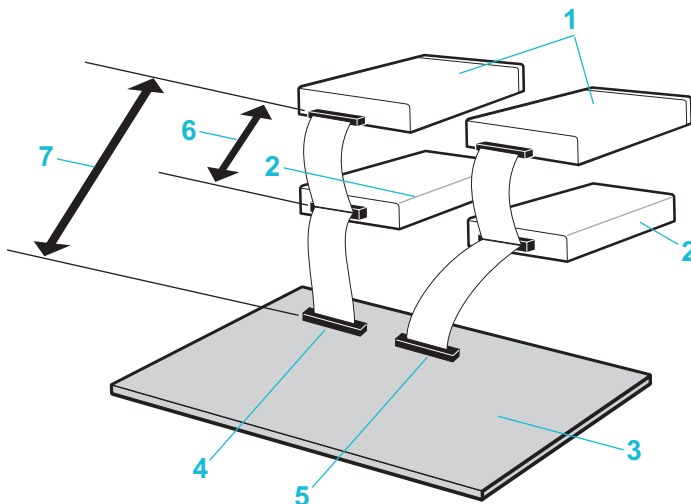


5. PC Connections

The drive connects to the motherboard of the host computer using an IDE interface cable.

Both Primary and Secondary connectors are usually provided on the motherboard, which may be connected as follows:

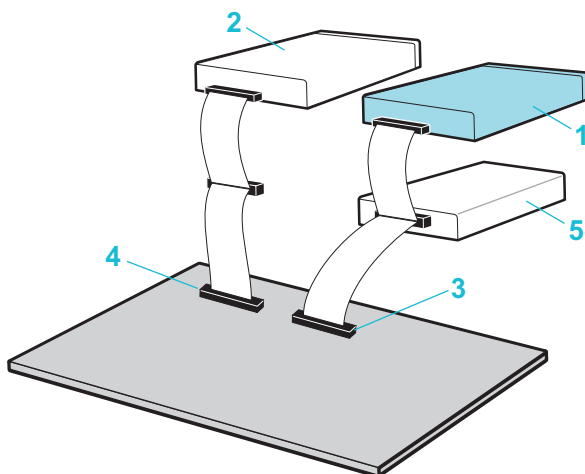
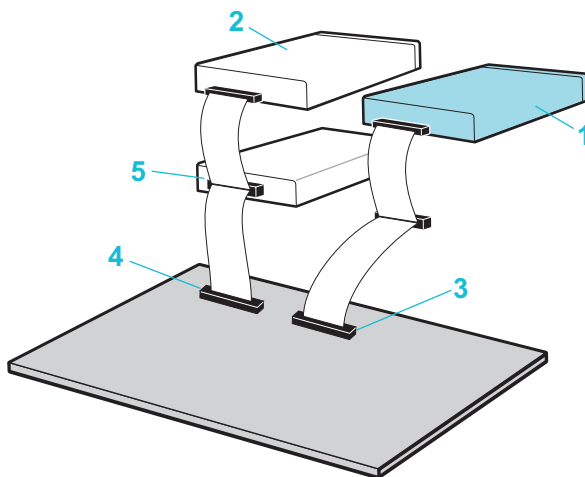
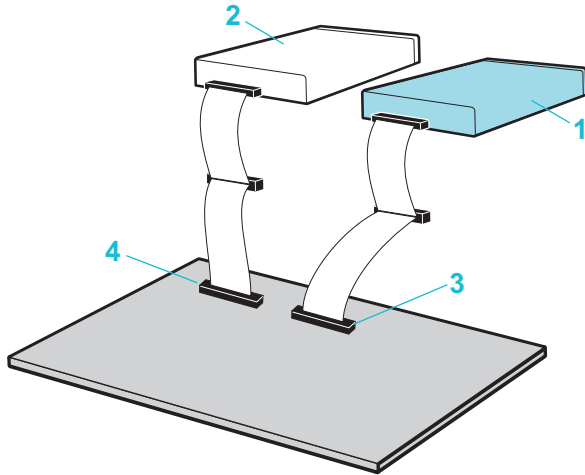
1. Master
2. Slave
3. Motherboard
4. Primary
5. Secondary
6. less than 6 inches
7. less than 18 inches



To Install as a Master Drive

To install the drive as a Master, the jumper can be left as supplied from the factory.

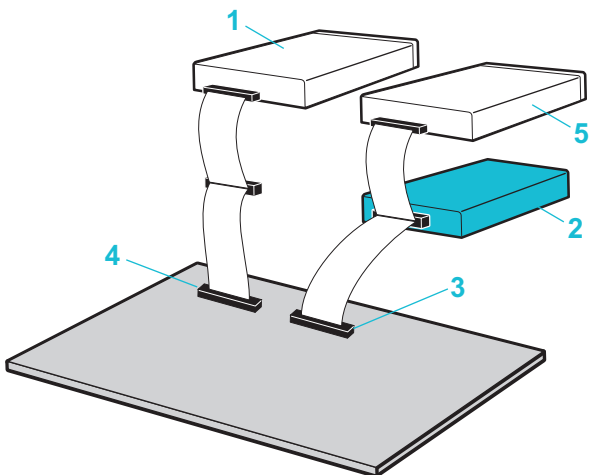
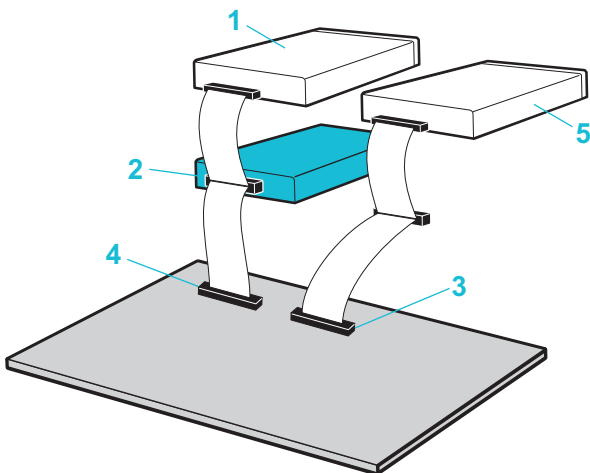
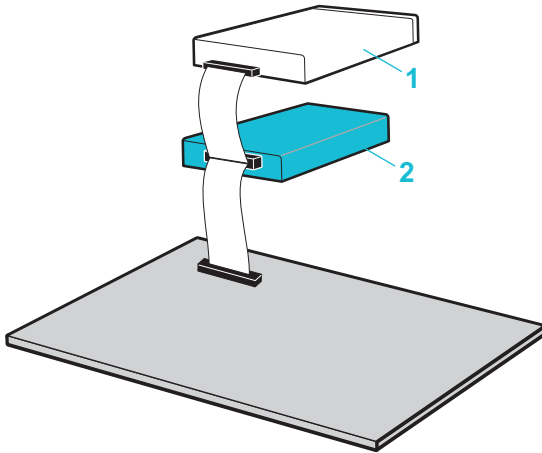
1. Master drive (DRU110A)
2. Master drive (Booting hard disk)
3. Secondary connector
4. Primary connector
5. Slave drive (Other IDE drive)



To Install as a Slave Drive

When connecting the drive as a slave drive, change the position of the slave setting jumper pin on the rear of the system unit.

1. Master drive (Booting hard disk)
2. Slave drive (DRU110A)
3. Secondary connector
4. Primary connector
5. Master drive (Other IDE drive)



6. Sound Card Connection

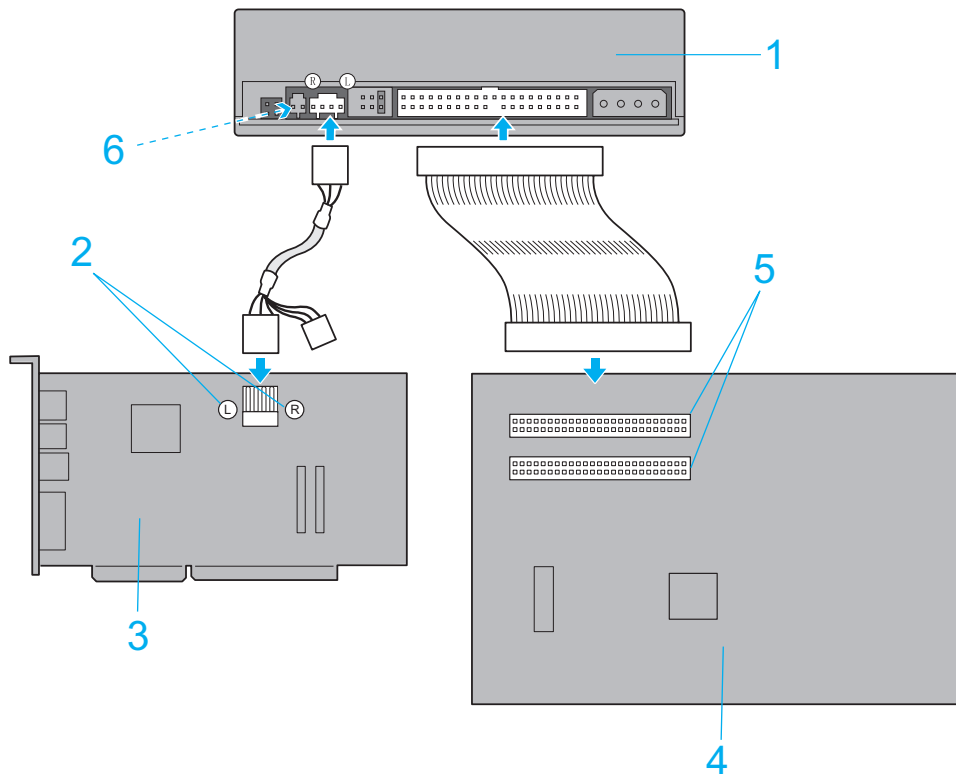
If the computer has a sound card, the drive can be connected to the sound card with an audio cable. Make sure the connections are oriented so that L corresponds to L and R to R. Refer to the manual for the sound card for detailed information regarding connection.



Audio digital output

The drive supports S/PDIF(IEC958) for digital audio output. As long as the sound board comes with S/PDIF input, it can be connected externally to the D/A converter. The drive can be used as a CD transporter for playing CDs at the desired sound quality level.

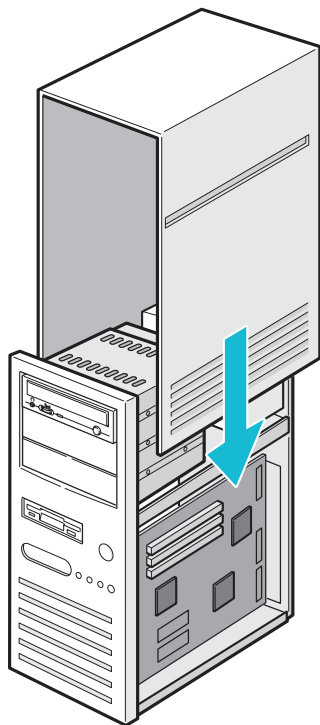
1. DRU110A
2. When L,R
3. Sound Card
4. Motherboard
5. Primary or secondary
- * 6. Digital audio output terminal



* Please purchase a digital-audio-capable sound board and a cable at additional cost.

7. Replacing the Computer Cover

When the installation of the drive unit is complete, replace the computer cover.



8. Device Drivers

When using Windows 98SE, Me, Windows 2000 (Professional) the installation of any special device drivers are not required.

In order to ensure normal drive operation or if the drive is not recognized by your computer, please check the following:

In order to ensure normal drive operation

For Windows 98SE, Me Users

- The drive is displayed in [control panels] - [system] - [device manager] - [CD-ROM]
- 32-bit is displayed in [control panels] - [system] - [performance]

For Windows 2000 (Professional) Users

- The drive is displayed in [control panels] - [system] - [hardware] - [device manager]
-

If the drive is not recognized by your computer

For Windows 98SE, Me Users

- If a [!] indicator is displayed on the IDE controller in [control panels] - [system] - [devices manager] - [harddisk controler], you will need to contact your PC manufacturer or the motherboard manufacturer and get the appropriate IDE controller driver.

For Windows 2000 (Professional) Users

- If a [!] indicator is displayed on the IDE controller in [control panels] - [system] - [hardware] - [device manager] , you will need to contact your PC manufacturer or the motherboard manufacturer and get the appropriate E-IDE controller driver.

After checking the above-mentioned points, contact the manufacturer of your PC or PC mother-board, if applicable, to obtain an appropriate IDE controller driver.

Installing the Software

You need to install the software bundled with this product, before you can write data onto CD-R/CD-RW/DVD+RW discs.

Also, for each software application, be sure to select the appropriate region and language.



Caution

Before installing the software, be sure to close all running software. If another version of the same software is already installed, uninstall it before installing the software bundled with the drive.

The software CD-ROM contains the following software. For instructions on how to operate the software, refer to their corresponding manuals.

- **WinDVD3.0**

When installing WinDVD, you must enter the "serial number". The serial number is printed on the seal of the bundled CD-ROM's jacket. Keep it safe.

For more information on WinDVD3.0, see the documentation.



Caution

- When playing back DVD software with its region code provided, you must set the region code (the region code can be changed up to fifth time including the initial setting).
- The region code can be set from WinDVD3.0.

For information on WinDVD3.0, see the following.

South Asia including China and Taiwan

E-MAIL: support@intervideo.com.tw

TEL: 886-2-8712-6128

1. Please reference to Help and Readme for WinDVD3.0 user operation. Check FAQ on InterVideo's web site for trouble shooting. Please have your system configuration information before you call or email to IVI support center.
2. Tel support is restricted to 9:30 to 12:00 AM, PM1:30 to PM5:00 based on local area time.
3. We'll open the recording machine after PM:5:00.

- **MyDVD 3.0**

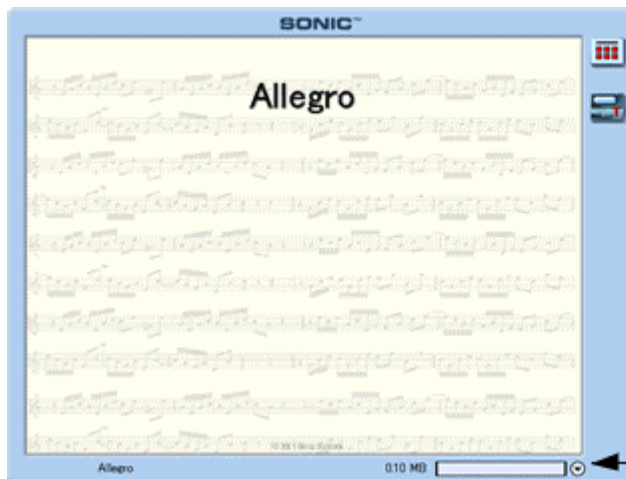
It is DVD-Video authoring software.

<Notes on Using>

A capacity meter is displayed at the lower right of the authoring screen. However, as you keep adding materials, "Over" may be displayed. Performing the write in this state will make the disk stop being normal, thus making its playback on the player impossible.

Therefore, perform the write after making that the capacity is appropriate, thus not allowing the "Over" message to appear.

(If "Over" does appear, adjust the capacity to an appropriate level by deleting/changing the materials and so on.)



DVD+RW disk:
Represented with 1000=1k. The disk's capacity of 4,700,372,992 bytes, however, is about 4.37GB based on 1024=1k. Some portions are allotted to menus, etc. and, therefore, not all of 4.7GB can be used for recording materials.

74-minute CD-R/RW disk: Up to about 650MB.

For information on MyDVD, see the following

Sonic Solutions <http://mydvd.sonic.com/>

- **B's Recorder GOLD**

Writing to DVD+RW media as well as CD-R/CD-RW media is possible.

See the documentation of B's Recorder GOLD for more details.

For more information on the DVD capabilities, refer to the supplemental documentation.

- **B's CLiP**

Simple drag-and-drop operation can be used for writing to DVD+RW media as well as CD-RW media.

See the documentation of B's CLiP for more details.

For more information on the DVD capabilities, refer to the supplemental documentation.

When installing **B's Recorder GOLD** or **B's CLiP**, you must enter its "serial number." The serial number is printed on surface of install CD.

*** B's CLiP does not support writing to the CD-R**

- For notes on use, see [here](#).

- For support on B's software

<http://bhacorp.com/>

The support becomes a correspondence of only English.

- **Acrobat reader**

This software enables you to display the manual (PDF format).

- **User's Manual (this manual)**

This is an HTML-based online user's manual.

- **Transfer Mode Utility**

When the drive does not operate in Ultra DMA mode, use this utility to switch the transfer mode to Multiword DMA, and operate the drive in Multiword DMA mode. For information on how to use the utility, [see here](#).

* Be sure to restart the PC after running this utility.

- **Introduce Movies**

Introduces the movies (MPEG2-format moving video pictures) contained on the CD-ROM by showing screen shots.

* Clicking any of these images will not play a movie. Specify a file in the playback software (WinDVD) to play a movie.

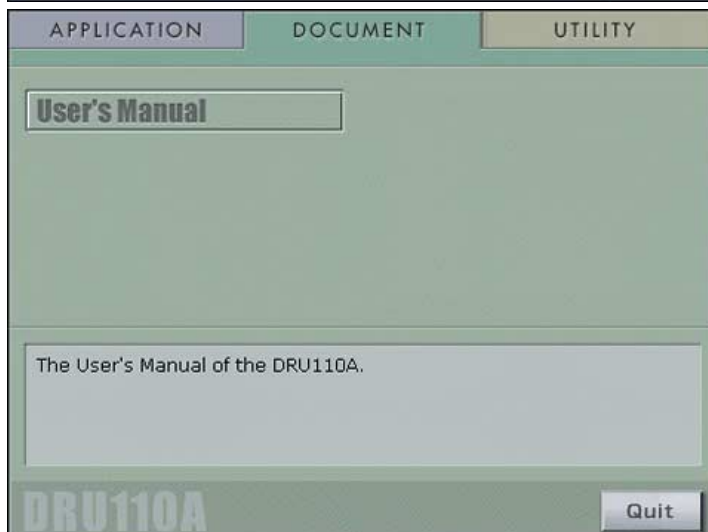
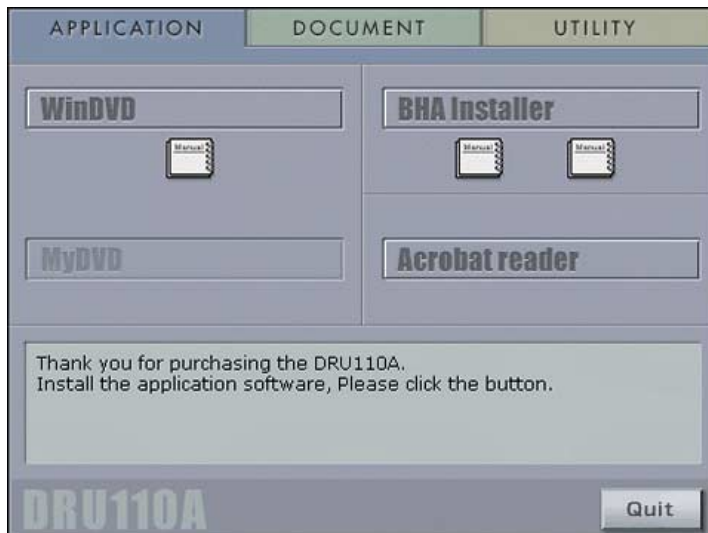
Installation procedure



Caution

Be sure to set up the drive first, before installing the software.

1. **Close the browser which is showing this document, and insert this CD-ROM into the computer again.**
The following setup menu appears.
If it does not appear, double-click the icon of the drive in [My Computer] where the CD-ROM is inserted.
The setup menu opens. You can switch between [Documents] and [Utilities].



2. Select and click the software or document you want to install.

APPLICATION

- [WIN DVD] -- The WinDVD installation window appears. Follow the prompts to install it. You can view the instructions by clicking on the book icon displayed at the bottom of [WinDVD].
- [WIN DVD manual] -- Displays description of how to use WIN DVD 3.0 .
- [MyDVD] -- Follow the prompts to install it.
- [BHA Installer] -- The B's Recorder GOLD and B's CLiP installation screen appears. Follow the prompts to install. You can view the instructions by clicking on the book icon displayed at the bottom of [BHA Installer].
- [B's Recorder GOLD Manual] -- Displays description of how to use B's Recorder GOLD.
- [B's CLiP Manual]-- Displays description of how to use B's CLiP.
- [Acrobat reader] -- The Acrobat Reader installation screen appears. Follow the prompts to install.

DOCUMENTS

- [User's Manual] -- This document .

UTILITIES

- [Transfer Mode Utility] -- If the drive does not operate in ultra DMA mode, use this utility to switch the drive into multi-word DMA mode. See [here for information on how to use](#). After changing the mode with this tool, be sure to restart the computer.
- [Introduce Movies] -- Introduces the movies (MPEG2-format moving video pictures) contained on the CD-ROM by showing screen shots.
* Clicking any of these images will not play a movie. Specify a file in the playback software (WinDVD) to play a movie.

Ending the Software CD-ROM

As installation of each software is completed, control returns to the setup menu.

1. Click [Exit] at the lower right.
 2. Take the software CD-ROM out of the drive.
-

How To Use the Transfer Mode Change Utility

Main Window

The "Default Read Speed" setting is not supported by the drive.

- To change the transfer mode:

[Target Drive] list: Displays the drive you are using.

[Transfer Mode]

- [Current] box: Displays the current transfer mode setting for the drive being shown on the [Target Drive] list.
- [New] list: Selects the transfer mode to set. You can choose between two options, "Multi Word DMA" and "Ultra DMA."
 - * To return to the previous transfer mode, choose the original transfer mode from the [New] list, and press the [GO] button.



Caution

- * After you have changed the above settings you need to restart the PC in order to make the settings take effect.
- * The transfer mode setting depends on the PC, the motherboard, or its Hard disk controller. To use it with UDMA2 mode for instance, the PC must have the function also.

B's Recorder GOLD

Use the recommended CD-R/CD-RW media that are listed on the user manual.

When you want to write additional data using a combination of B's Recorder and the drive to a disc that was written to by any other combination, the previous data may become unreadable. In such a case, copy the precious files onto the hard disk once, and then record all of data onto a new disc using B's Recorder and the drive.

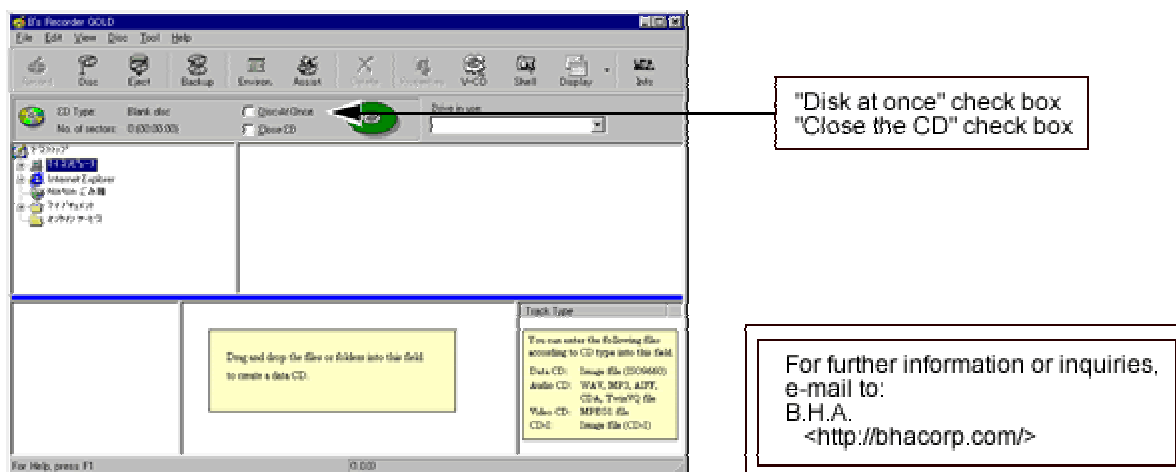
In case the file you attempted to create cannot be read after multi-session writing, take out the disc, and then insert it again.

Some CD-ROM drives cannot be used as a source drive in disc-at-once recording of music.

When erasing the entire surface of a CD-RW disc, erase operation may still continue even after the screen indicates the end of operation (more than 50 minutes), depending on the media you use. This does not mean any failure. Wait until the orange LED on the drive goes off.

<Notes on Using>

B's Recorder GOLD 3.0 The DVD+RW disk is different from the CD-R/RW disk in that the former does not have the concept of multi-session tracks. Performing the write after activating the "Disk at once" and "Close the CD" check boxes may not result in adding records. **Therefore, when adding records to the DVD+RW disk, do not activate the check boxes.**



B's CLiP

On a CD-RW disc that was formatted by B's CLiP, files can be deleted or overwritten on a file-by-file basis, and a file can be saved directly from an application. In order that a CD-RW disc that was formatted by B's CLiP can be read on a CD-ROM drive or DVD-ROM drive, the CD-ROM/DVD-ROM drive must be CD-RW media-ready, or a MultiRead drive.

Even if B's CLiP is installed on the computer, you cannot read media on a CD-ROM/DVD-ROM drive that does not satisfy the requirements. If you want to make the recorded media readable on various drives, it is recommended to write on the CD-R media using CD premastering software.

When formatting CD-RW media, it takes 10 minutes for a high speed CD-RW disc, 25 minutes for a 4X CD-ROM disc. When re-formatting, it takes about 10 minutes.

When using DVD+RW media, the process apparently ends in about one minute by virtue of a new feature of background formatting.

Although writing and reading are possible while in this state, the formatting is performed only in the moments when the drive is not writing or reading information until the entire recording surface of the disc medium is formatted.

During this process, the operation is performed on the drive side alone, and it will not burden the PC operation (performance).

Data capacity of formatted CD-RW medium is about 529 MB (74-minute medium). This figure conforms to the UDF specifications and is a normal value.

Be aware that you cannot append write data with mixed use of premastering software (such as B's Recorder GOLD) and B's CLiP for different sessions on the same disc. Similarly, you cannot erase or overwrite data on a file-by-file base on CD-RW media that was written to using software from other software company. In order to make full use of the drive's capabilities, it is recommended you copy the files from the CD-RW media to hard disk once, and then record the data to a CD-RW disc newly formatted by B's CLiP.

The recording capacity of a formatted DVD+RW disc is 4.37 GB.

In order to read a DVD+RW disc bearing information that has been written with B's CLiP, your must have B's CLiP, which is provided with the drive, already installed.

BHA will offer you a reader driver in the future.

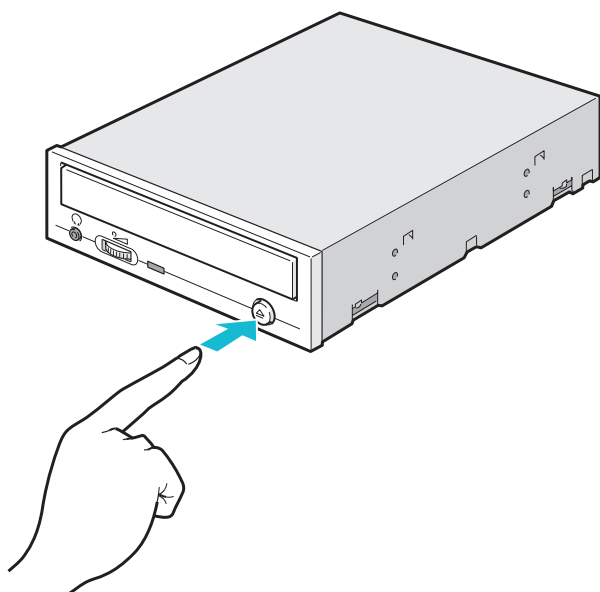


Caution

When using CD-ROM discs, DVD-ROM discs, CD-R discs or CD-RW discs, do not attach any stickers or labels to the discs. Using discs with labels attached not only causes read and write errors, but data on the disc may be lost due to damage to the disc itself.

Load the disc

1. Press the eject button.



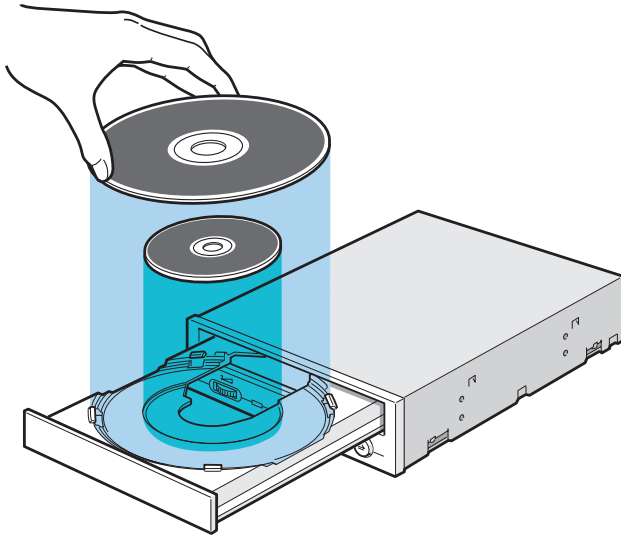
2. Place the disc on the disc tray.

Be careful not to touch the recording surface of the disc.

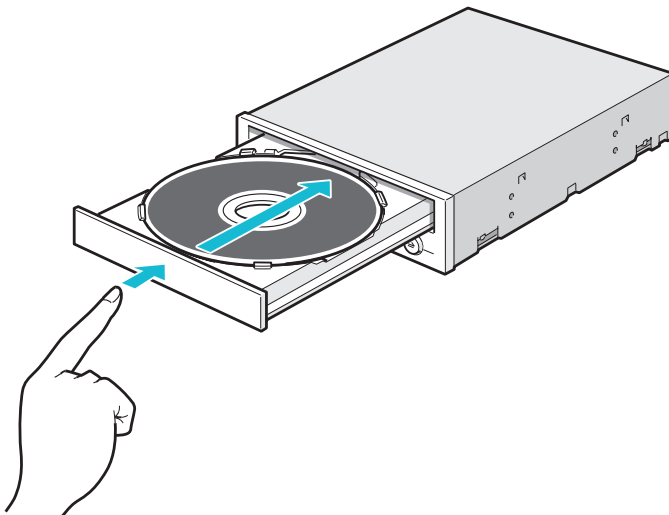
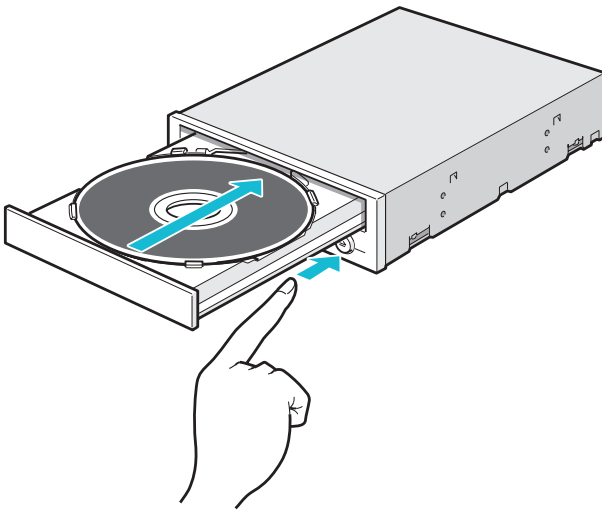


Caution

- **DVD-R/RW (DVD minus R/RW) disc media cannot be used.**
- When using a 12cm CD, place the disc in the larger circular depression with its label side facing upside.
- When using an 8cm CD-ROM, place the disc in the smaller circular depression with its label side facing upside.
(Writing to 80-mm CD-R and CD-RW media is not supported. Such media can be read only.)
- Be careful not to touch the recording surface of a disc.
- Discs of irregular shapes (business card-sized, heart-shaped, etc.) cannot be used (written to nor played).
(The drive cannot use such media even with the use of an adapter.)

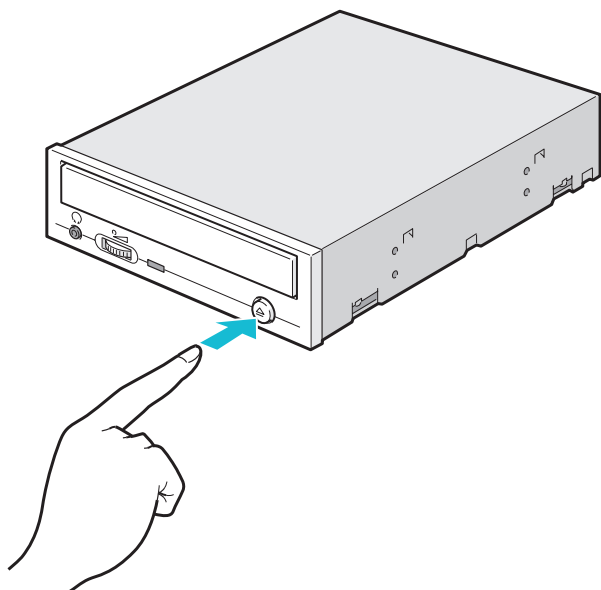


3. Load the disc by pressing the eject button or by lightly pushing in the disc tray.

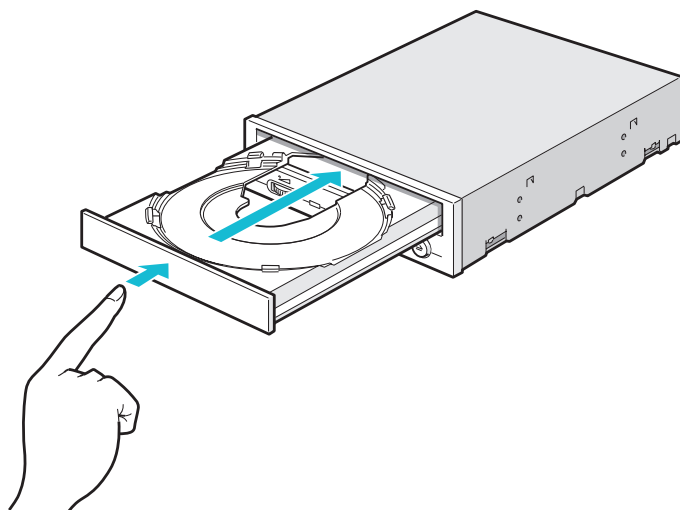
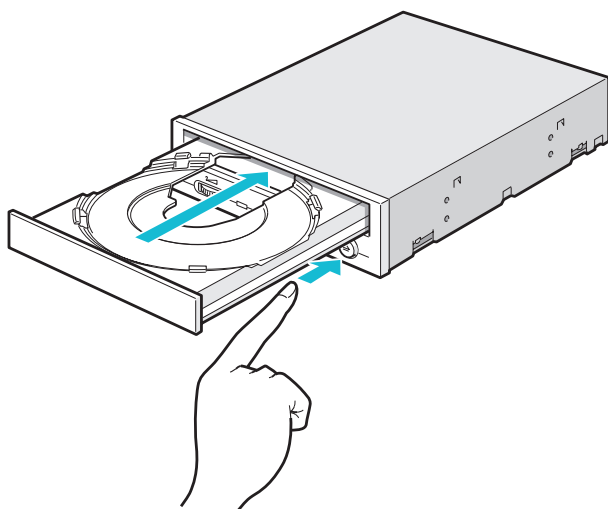


Disc ejection

1. Press the eject button



2. Slowly take the disc out of the disc tray
3. Press the eject button or push the disc tray and the tray will be inserted back into the drive.



**Caution**

After ejecting the disc, return the disc tray inside the unit quickly. When the disc tray is in the ejected position, dust and other debris will enter, possibly causing read errors, write errors, or drive failure.

How to eject disc using B's CLIP

To eject a disc medium when using B's CLIP, follow the steps described below:

Ejecting a disc using the taskbar

1. From the taskbar tray, select the B's CLIP icon (arrow mark).
2. With the icon being selected, press the right-button of the mouse, and then choose [Eject].
By choosing [Eject], you can take the disc out.

Ejecting a disc by operating from My Computer or Explorer

1. Select the DRU110A drive from My Computer or Explorer.
 2. With the drive being selected, press the right-button of the mouse, and then choose [Eject].
By choosing [Eject], you can take the disc out.
-

Emergency Eject

This drive has a function that allows the CD to be ejected manually, if this becomes necessary in an emergency such as failure of the drive or a power outage. Follow the following procedures in such a case.



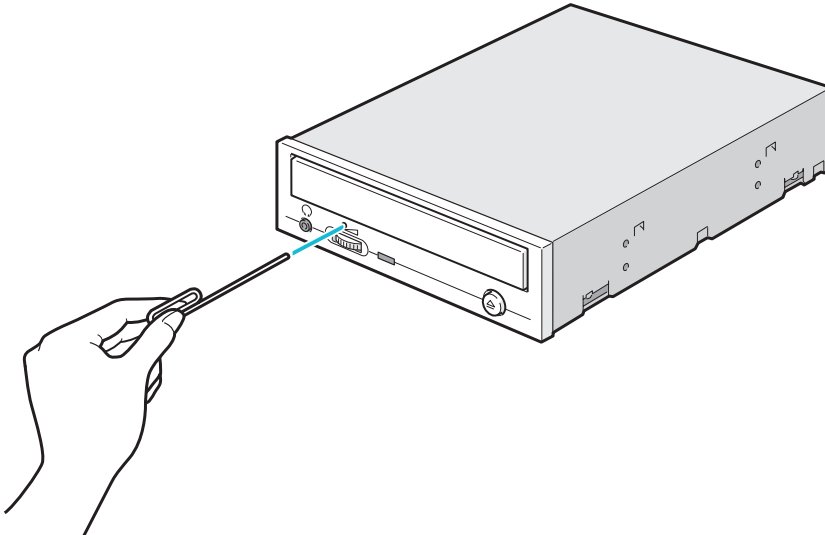
Caution

This feature is a last measure to be used only in an emergency. Using it excessively will cause malfunction.

1. Turn the power to OFF.
2. Insert a fine tipped object into the emergency eject hole.
For more information on how to do this, [see figure](#).
3. Pull the front door to open it all the way,
then grip the disc tray between thumb and forefinger and gently pull it straight out.

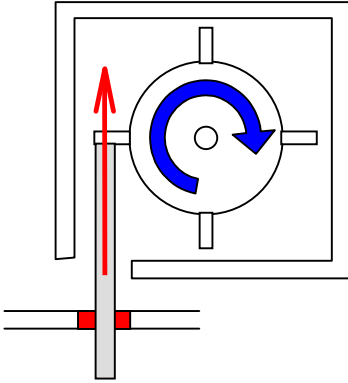


If you cannot get a good grip on the disc tray with your fingers, use a steel binder clip or spring clamp to pull it out.

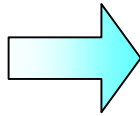
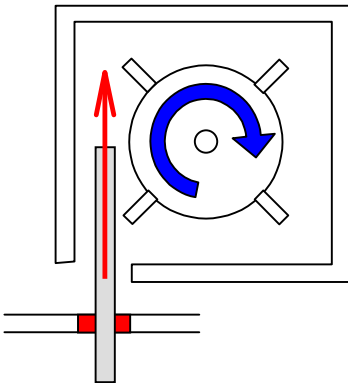


Emergency Eject Hole

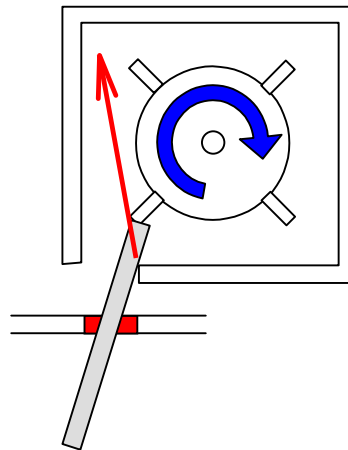
The structure inside the emergency eject hole is as shown below. When you push a thin, stiff wire into the hole, it presses one of the vanes around the gear, thus rotating the gear for ejecting the tray. Repeating this action three times or so ejects the tray out.



If you cannot successfully eject the tray by pushing a thin, rigid object in, the situation may be as follows. The four vanes may be oriented just at the angles as shown below.



In such a case, push the tip of the thin wire in the following direction with the wire angled at about 15 degrees so that the tray can easily be ejected.



Using the Drive in a Vertical Position

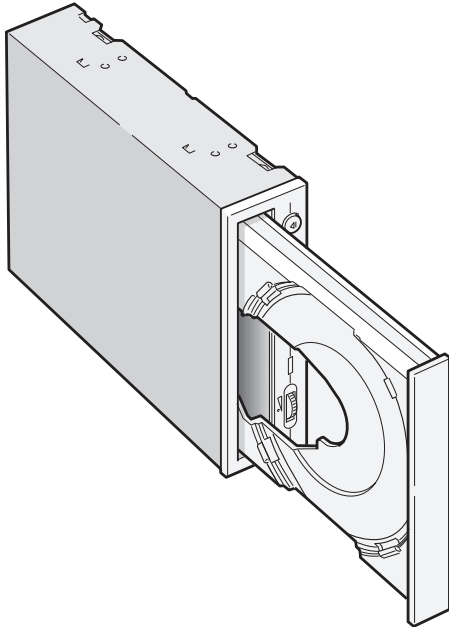
The drive can be installed in a vertical position.

1. Locate the four tabs on the disc tray.
Turn each of them inwards until they click into place.
2. When loading a disc, insert it into the inner side of the tabs.



Caution

Cannot be used with 8cm CD-ROM s.
Cannot be used with business card CDs.



Drive : DRU110A

Type	Internal type
Interface	Enhanced-IDE (ATAPI)
Data buffer memory	2MB
Data transfer speed	33.3MB/sec. (Max.) (PIO4, DMA2)
CD-R/CD-RW/High Speed CD-RW Write/Read speed (Ave.)	<p>< Read Speed ></p> <p>4×: 600KB/sec.</p> <p>8×: 1200KB/sec.</p> <p>20×: 3000KB/sec.*¹</p> <p>32×: 4.8MB/sec.*¹</p> <p>< Write Speed ></p> <p>CD-R :</p> <p>4×: 600KB/sec.</p> <p>8×: 1200KB/sec.</p> <p>12×: 1.8MB/sec.</p> <p>CD-RW :</p> <p>4×: 600KB/sec.</p> <p>10×: 1.5MB/sec.</p> <p>DVD+RW :</p> <p>2.4x: 3.32MB/sec.(MAX)</p> <p>< DVD Read Speed ></p> <p>8×: 11.08MB/sec.(MAX)</p>
Average access time	CD 100msec. / DVD 140msec.
Initial processing time	CD-ROM 14sec. or less CD-R/RW (also High Speed CD-RW) 19sec. or less
Mounting direction	horizontal/vertical (eject button upper)

Compatible formats	Format	Write	Read	Play ^{*2}
	CD-DA	*	*	*
	CD-ROM	*	*	
	CD-Extra	*	*	*
	CD-ROM XA	*	*	
	Photo CD ^{*3} ^{*4}	*	*	
	CD-i ^{*3} ^{*4}	*	*	
	Video-CD	*	*	
	CD-Text	*	*	
	DVD-ROM		*	
	DVD+RW	*	*	
Loading system	Tray type (automatic loading/eject)			
Power	DC5V, DC12V			
Power consumption	16w			
Weight	Less than 1.2 Kg.			
Dimensions	145.6 X 191.4 X 41.6(Without front panel)mm			
Environmental conditions		Operating	Non operating	
	Temperature	5°C to 35°C (No air cooling)	-30°C to 65°C	

*1 Speed is automatically reduced if reading is unsuccessful.

*2 "Play" means playback. Also, "Read" means transferring data.

*3 CD-i and Photo-CD discs require special reader/player. Also, Photo-CD requires a license from Kodak.

*4 Bundled software does not support these writing formats.

The drive's appearance and specifications may change without notice.

[PCs and Peripherals that can be connected](#)

[About Connection and Write](#)

[The drive doesn't have power](#)

[The system doesn't start](#)

[Cannot Read or Write Discs](#)

[Frequently Asked Questions](#)

[Glossary](#)



When consulting your dealer, try as much as possible to bring with you information about the operating environment as well as the situation of the problem.

- When?
- What happened?
- How long?
- What was going on?
- Were there any error messages displayed?

PCs and Peripherals that can be connected

About the PC environment for connection

Note that the following PCs may not work with the Sony DRU110A.

- IBM APTIVA E-21/31 series and E-17/27/47 series:

It has been confirmed that the Sony DRU110A does not work with these PCs.

About the applications

- During a write operation, any memory-resident application such as anti-virus program may run into conflict^{*1} with abCD and PrimoCD Plus and cause problems. Therefore, uninstall it for the write operation. If the application cannot be uninstalled, temporarily stop the application, and then perform the write operation.
* 1: Conflict = Clash between applications
- If the Task Scheduler is installed in Windows98 Plus and it activates during a write operation, this will cause problem to the write operation. To solve this problem, you can temporarily stop the Task Scheduler, and then perform the write operation, or change the time the Task Scheduler activates.

About Connection and Write

Connection

- [Can the DRU110A be connected to Macintosh?](#)
- [When the PC boots up, the BIOS can recognize the primary \(master/slave\) hard disk drive, but it cannot recognize all devices connected to the secondary hard disk drive. Why?](#)
- [When using the DRU110A with Windows 98SE, Me, and Windows2000 \(Professional\) do I need to install any device driver?](#)
- [While the DRU110A cannot be recognized by the BIOS, it is recognized by the operating system. Does it mean the drive is faulty?](#)
- [When my PC is connected to the DRU110A for data write, is it necessary to turn off the PC's resume function and screen saver?](#)

Data Write

- [Does the DRU110A support CD-TEXT write?](#)
- [When I try to write Audio CD from the CD-ROM drive to the DRU110A drive directly at 12X speed, I get the "Buffer Under-Run" error message. \(The CD-ROM data is write permitted.\)](#)
- [When I try to write Audio CD from the CD-ROM drive to the DRU110A drive directly, I get an error message and write to Audio CD is denied. \(CD-ROM data can be written.\)](#)

DVD

- [Does the drive support writing to DVD-R/DVD-RW/DVD+R media?](#)
- [Which manufacturer's media products have been tested for successful operation?](#)
- [Does the drive support writing to 8-cm CD-R or business card-sized CD-R media?](#)
- [After installation of writing software, insertion of a blank disc medium displays "Audio CD."](#)
- [Attempting to write to a disc hangs up or restarts the computer.](#)
- [When a DVD-Video is played, noise comes out together with its recorded sound. Or, the sound is output on one channel only.](#)
- [When playing a DVD-Video disc, sound does not come out from the headphone jack located on the front side of the drive.](#)
- [When a DVD-Video disc is played, images move like frame-by-frame advance. Or, the image motion appears jerky. Or, the playback ends in the middle.](#)

Answers on connection

Can the DRU110A be connected to Macintosh?

The DRU110A is designed for use with Windows only. It cannot be used with Macintosh.

When the PC boots up, the BIOS can recognize the primary (master/slave) hard disk drive, but it cannot recognize all devices connected to the secondary hard disk drive. Why?

1. Is the power cable correctly connected?
2. Is the ATAPI interface cable correctly connected? (Make sure it is completely plugged in.)
3. Is the setup correct? Is the position of the (master/slave) jumper pin (JP) correctly set? (* Check to see whether it is inserted into CSEL.)
4. On the BIOS, is the secondary disabled? (* For detailed information on BIOS settings, please contact the PC's manufacturer.)
5. Is the secondary's interface cable too long? (Has it exceeded the ATAPI specification of approximately 18 inches (about 45 cm) ?)
6. Is the ATAPI cable's pins twisted? (* Also make sure there is no reversed insertion.)

When using the DRU110A with Windows 98SE, Me, and Windows 2000 (Professional) do I need to install any device driver?

No DRU110A device driver is required. Because Windows 98SE, Me, and Windows 2000 (Professional) has the ATAPI driver built into the operating system, they can recognize the DRU110A as a CD-ROM drive.

While the DRU110A cannot be recognized by the BIOS, it is recognized by the operating system. Does it mean the drive is faulty?

No, the drive is not faulty. Even if the DRU110A cannot be recognized by the BIOS, as long as it is recognized by the operating system, there is no problem.

When my PC is connected to the DRU110A for data write, is it necessary to turn off the PC's resume function and screen saver?

When the Buffer under-run error protection setting is enabled, there is no problem.

Answers on data write

Does the DRU110A support CD-TEXT write?

The DRU110A supports data write using the CD-TEXT format.

When I try to write Audio CD from the CD-ROM drive to the DRU110A drive directly at 12X speed, I get the "Buffer Under-Run" error message. (The CD-ROM data is write permitted.)

It is possible that the CD-ROM drive cannot extract digital audio data at 12x speed (2.1MB/s) or higher. The Sony DRU110A has a feature which could avoid the Buffer Under-Run Error check to see this function enabled.

Or Using speed test software(audio extraction test), verify the speed at which the CD-ROM drive can extract audio data.

When I try to write Audio CD from the CD-ROM drive to the DRU110A drive directly, I get an error message and write to Audio CD is denied. (CD-ROM data can be written.)

The reason may be the CD-ROM drive does not support Audio CD's digital signals. In this case, create a wave file on the DRU110A drive, and then perform the write operation. (* For detailed information on how to create Wave files, refer to the instruction which comes with PrimoCD.)

Answers on DVD

Does the drive support writing to DVD-R/DVD-RW/DVD+R media?

Writing to such media is not supported. Use the media recommended for the Drive.

Which manufacturer's media products have been tested for successful operation?

CD-R	Sony, Ricoh, Taiyo Yuden, Mitsui Chemicals, Mitsubishi Chemical, Maxell
CD-RW	Sony, Ricoh, Mitsubishi Chemical
High Speed	Sony, Ricoh, Mitsubishi Chemical
DVD+RW	Sony, Ricoh, Mitsubishi Chemical

Even when you use tested media, writing may fail because the medium's manufacturer has changed the material it uses or because of some other reason.

In such a case, try another type of tested media.

Does the drive support writing to 8-cm CD-R or business card-sized CD-R media?

Writing to such media is not supported.

Also for reading from media of special shapes such as business card-sized or heart-shaped media, proper operation is not guaranteed.

After installation of writing software, inserting a blank disc medium displays "Audio CD."

- The hard disk controller driver may not be compatible with the CD-RW drive.
- Update your hard disk controller to the latest version and try again. For the driver, consult the manufacturer of your personal computer, mother board, and chip set.
- The hard disk controller driver can be checked by selecting [Control Panel] - [System] - [Device Manager].

Attempting to write to a disc hangs up or restarts the computer.

- If writing software from other manufacturer has been installed on your system, uninstall that software.
- This phenomenon may occur on a Compaq PC with Compaq's utility (ex., Insight Manager) installed. In this case, it is advised to bring the computer system into the state of having only an operating system installed.

When a DVD-Video is played, noise comes out together with its recorded sound. Or, the sound is output on one channel only.

Change your sound card driver. For information on the driver, consult the manufacturer of your sound card.

When playing a DVD-Video disc, sound does not come out from the headphone jack located on the front side of the drive.

When playing a DVD-Video disc, sound is not output to the headphone jack. This is not a breakdown. This applies not only to our drive but also to DVD-ROM drives of other makes.

When a DVD-Video disc is played, images move like frame-by-frame advance. Or, the image motion appears jerky. Or, the playback ends in the middle.

Check the following points.

- Has your video card been tested for proper operation with WinDVD? For information, visit the site of InterVideo Japan.
- Update the video card driver. For information on the driver, consult the manufacturer of your video card.
- Update the hard disk controller driver.
- If the drive's DMA is not set to ON, turn it ON.
To determine whether DMA is ON or OFF, double-click [Control Panel] - [System] - [Device Manager] - CD-ROM, then double-click DRU110A, and open the [Settings] tab.
If no DMA option is displayed, check the utility of your hard disk controller driver.

The drive doesn't have power

- Is the power supply cable from the host computer plugged in?
- Are DC5V and DC12V being correctly supplied to the drive?

The system doesn't start

- Are the Primary and Secondary connections and the Master and Slave settings correct?
- Is the total length of the E-IDE cable 18 inches or less?
- Is each connector completely attached?

Cannot Read or Write Discs

- Is the CD-RW device driver properly selected? refer to Device Drivers
 - Is the condition of everything else in the system (CPU, hard disc, and others) as it should be?
 - Does the CD-R or CD-RW disc have dirt or scratches?
 - Did a screen saver or other application operate while writing to the disc?
 - Is there enough free space on the CD-R/RW disc?
 - Does writing fail even using the simulation test?
 - Is the disc loaded in the drive with the read/write surface facing the right direction?
 - Is the drive installed in the correct orientation?
 - Was the drive or disc moved from a low temperature environment to a high temperature environment? (There is a possibility of condensation on the lens in the drive or on the surface of the disc.)
-

Frequently Asked Questions

How many times can I write to a CD-RW disc?

According to the Orange Book's specification, you can write up to about 1000 times. However, in actual cases, Sony's CD-RW discs can be written to several thousand times. Also, for random access write, while the file management area is frequently updated, the design tries to avoid using the same location on the disc to record data. As a result, you really do not need to worry about the number of times you can write to a CD-RW disc.

How many times can DVD+RW media be rewritten?

Sony's DVD+RW media actually can be rewritten over 1000 times.

What is random access write?

Random access write is one of the methods to write data to CD-RW discs. This method allows for partial erasing and writing of data.

What is buffer under-run error?

This error occurs when the PC's data transfer rate is slower than the write speed to a CD-R/RW disc. Data is temporarily stored in a buffer (memory for temporarily storing data for processing) on the drive before it is written onto a disc. If the buffer becomes empty due to the speed difference, the write operation cannot continue and an error occurs. This error may be due to the PC's insufficient CPU power, but can be avoided by using the following method. On the other hand, if you use abCD (or packet writing software), write is based on packets (64 KB each) and therefore buffer under-run error can hardly occur.

- The DRU110A has the function for avoiding the Buffer Under-Run Error.
 - Before performing a data write, close all running applications which have nothing to do with it. Also, remove screen saver and memory-resident applications (system monitor, anti-virus application, etc.) as they may cause error as well.
 - Reduce the write speed of the CD-R/CD-RW drive.
For instance,
CD-R: 12X > 8X > 4X
CD-RW: 4X
High Speed CD-RW: 10X > 4X
 - Reboot the PC before performing a data write operation.
 - Perform defragmentation (put related data into the same location) on the hard drive before performing a data write operation.
 - Turn off the power management function of the hard drive.
 - Create a data image on the hard drive first, and then write to the CD-R/CD-RW drive.
-

How long does it takes to format a disc for packet writing?

- About 15 to 30 minutes when 4X-capable CD-RW medium is formatted at 4X speed.
 - About 10 minutes when high speed CD-RW medium is formatted at 10X speed.
-

When should I use a CD-R disc and when should I use a CD-RW disc?

CD-R discs allow write once only, which means you cannot modify a CD-R disc once it is written with data. This makes CD-R discs a good medium for storing important documents such as contracts and accounting documents where you do not want the data to be modified by others.

Besides, they offer long storage duration. Also, the best thing about CD-R discs is they can be used on any PC equipped with a CD-ROM drive because of their high compatibility with CD-ROM drive. On the other hand, CD-RW discs allow you to write data to the same disc again and again. This makes it a good choice as a medium for frequent backing up of hard drives, for example.

Glossary

File system-related glossary

- [ISO9660](#)
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File system-related glossary

When creating a CD, you need to select a file system suitable for the environment (Windows, Mac, UNIX) where the CD will be played. Main file systems are ISO9660, Joliet, Romeo, HFS, and Hybrid. Each file system has different restrictions on the length of file name and location.

ISO9660

Used for playing CDs in different OSs such as Windows and Mac. ISO9660 file system limits the file name to 8 characters with file extension up to 3 characters. Only alphabet, number (0-9) and underscore (_) can be used in the file name (8.3 format).

Joliet

It is a Microsoft's proprietary file system where a long file name of up to 64 characters can be used. Because this file system overlaps with the ISO9660 file system, OSs which do not support Joliet can still read the files using the 8.3 format.

ROMEO

This is also a Microsoft's proprietary file system where a long file name of up to 128 characters can be used. This file format is not compatible with ISO9660 and is limited to Windows 95/NT only.

HFS (Hierarchical File System)

This is a complete implementation of the MacOS's file system on CD-ROM. Its use is limited to the MacOS environment only.

Hybrid

Where two file systems exist on the same CD-ROM

Write-related glossary

For writing data to a CD, two methods are available: the Disc At Once method which writes all of the data at once to the disc; and the Incremental Write method which writes data in units of smaller chunks. According to the unit size, the Incremental Write method can further be broken down into three types: Session At Once, Track At Once, and Packet Write.

Buffer Under-run Error Protection

Buffer under-run errors that would occur when data transfer falls behind writing operation has been inevitable for CD-R/RW drives. The DRU110A is the industry's drive that features buffer under-run error protection technology. With this technology, the DRU110A ensures stable writing operation even under circumstances where buffer under-run errors tend to occur with conventional drives.

Disc At Once

This method writes the whole data at once, not incrementally. As a result, data link block does not occur and therefore this method is very suitable for pre-mastering and creating music CDs.

Track At Once

This method writes data one track at a time, and therefore data can be added. Because data link block is resulted, this method is not suitable for creating music CDs with no no-sound portion (such as live recording). This is the main-stream write method used by mastering-type writing software.

Packet Write

This method writes data in smaller chunks than session and track, It writes data in packets (64 KB for UDF2.0) Because data can be deleted and written in units of files, this method enables you to use CD-R/CD-RW discs like floppy disks. In terms of packet writing software, two types are available. One type uses a proprietary format while the other type is based on the UDF standard which is compatible with DVD.

UDF (Universal Disc Format)

It is a worldwide standard in packet writing method. It's file format was first adopted on DVD-ROM and later extended to CD. As the laser disc's standard format it replaces ISO9660 (which imposes restrictions on file name, etc.) and is expected to become the main recording format of CDs.

Multi-session

In this method, data on a CD is formed by a session consisting of [Lead-In/Program Area/Lead-Out]. When data is added to the CD-R/CD-RW disc using Track At Once method, the new session is added after the previous session. A CD with data added in this way is called a multi-session CD. Because music CD players can only play the first session, when creating CD-DA, use Single Session to perform the write operation.

Session Close

This is a process to enclose data area. The Lead-In area precedes the data area which is then followed by the Lead-Out area. If this process is not performed, the created disc cannot be read from a CD-ROM drive.

Finalize

When a disc is created using the Multi-session method, after data is written onto the disc, prohibition to add is specified and then Session Close is performed. Then, when the Finalize process is executed, no more addition onto the disc is allowed.

CD format-related glossary

CD-DA(Compact Disc-Digital Audio)

In other words they are music CDs. The discs contain only music data and data is written using the Single Session method.

Video CD

CD-ROM storing mainly MPEG-compressed video, together with still picture and sound.

CD-ROM XA

CD-ROM storing both music/video and data.

Mixed Mode CD

Both music and data are stored in the same session. Because they may cause music CD players to malfunction, they are not commonly used now.

CD-EXTRA

It is a format which improves the problem of Mixed Mode CD. In this format music and data are stored separately in two sessions.

PhotoCD

Refers to a CD format devised by Eastman Kodak to record digitized photos, as well as the whole system.

Other glossary

DVD+RW

DVD+(plus)RW refers to a specification for 4.7-GB rewritable DVDs. The revolutionary features of DVD+RW are complete compatibility with CD-R/RW from which it was developed further, and its usability as a PC peripheral device.

It has achieved high compatibility with existing DVD-ROM drives and DVD-Video players, and it has gained ease of use in operation from PCs thanks to some improvement including reduction of formatting time and as much as 2.4 times of speed (about 22x when converted for CD) made possible.

Multi-read CD-ROM drive

A CD-ROM or DVD-ROM drive which can read CD-RW discs formatted by UDF or ISO9660. The drive comes added with an AGC (Auto Gain Control) device and modified firmware for reading CD-RW discs with low reflection rate.

High Speed CD-RW Media

The high-speed CD-RW media is a type of media that conforms to a new CD-RW media standard instituted for high-speed (4x to 10x) recording. It can be used only with those drives bearing the "High Speed CD-RW" logo.

Ultra DMA33

A method in which data is transferred on both the rising edge and falling edge of the chip set's operating clock, thus achieving a maximum data transfer rate of 33 MB/s, double the conventional rate. In order that this protocol can operate, the connected device (drive) and the chip set itself need to support this protocol, and a dedicated driver file is required.

If you want to use a new chip set, you must obtain a driver for it separately from those chip set drivers that comes with the operating system as standard. Since the increased transfer rate may cause a noise problem, you must pay attention to the length of the flat cable used, and the noise generated by the PC system itself.

Multiword DMA

A transfer method in which a chip set (DMA controller) directly performs data transfer in place of the CPU. In Multiword DMA Mode-2, data can be transferred at the rate of 16.6 MB/s, which is equivalent to the PIO Mode-4, lightening the CPU load. This protocol requires support by the chip set and its dedicated driver file.

Although Windows 98 and Windows Me includes some chip set drivers as standard, you may need to obtain a driver separately when you use a new chip set.

Programmed I/O (PIO)

A transfer method in which the CPU directly performs data transfer. In Mode-4, which achieves the maximum rate, data transfer at the rate of 16.6 MB/s is possible, but that greatly burdens the CPU load in Windows OS that perform multitask operation.

Warranty

Sony warrants this product to be free from defects in materials and work-manship under normal use within the set warranty period. If defects covered by the warranty exist, you must notify Sony within the warranty period in order to receive repairs or replacements.

In case there is any missing or defective parts in the package, please take the package to the store within one month from the purchase date to have it exchanged (the package can be exchanged only when you bring it with all pieces included).

The following cases are NOT covered by the warranty:

- Improper use or storage of the product.
- Attempted repairs, improvements, or changes by persons not authorized by Sony.
- Violent handling, inattentiveness, electrical trouble (e.g. power surges, lightening, etc.), improper packing, and so on.
- Incorrect installation of the product.
- Products with marred, or illegible serial numbers.

In no event will Sony be liable for any loss or damages to the customer's property or facilities, lost profits, lost revenue, repair costs, interruption of business, incurred expenses, inconveniences, or other incidental or consequential damages arising out of the use of or inability to use any product. Furthermore, for all cases, any compensation paid out will never exceed the original purchase price of the product.

For repair service under the terms of the warranty, please contact the store where you made your purchase first. You will need to provide the proper document(s) showing your valid warranty.

When returning your product to Sony or an authorized dealer for repairs, you will need to pay for the packing and shipping.

For Support on B's software

<http://bhacorp.com/>

The support becomes a correspondence of only English.

WinDVD3.0

South Asia including China and Taiwan

E-MAIL: support@intervideo.com.tw

TEL:886-2-8712-6128

MyDVD

Sonic Solutions

<http://mydvd.sonic.com/>
