SONY

SPRESSA™ CD-ReWritable

Sony CD-RW Recorder

Technical Support

Technical Support can be reached 8:00am to 8:00pm, Central Time, Monday through Saturday. Please have your model number, serial number, date of purchase and receipt handy before calling Technical Support. Free telephone support is offered for 90 days from your first call.

Phone	(800) 588-3847
Sony Web Site	http://www.sony.com/storagesupport

Printed USA 01/01
CD-RW-UM-0101
P/N ZP1239581

Storage by Sony

Spressa™

User's Guide

Spressa™

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LIMITED WARRANTY

A separate warranty card is enclosed with the documentation.

OWNER'S RECORD

The model and serial numbers are located on the topside of the drive. Record these numbers in the space provided below. Refer to them whenever you call upon your sales representative regarding this product.

Model No. _____ Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture. To avoid electrical shock, do not open the unit. Refer servicing to qualified personnel only.

CAUTION

The use of optical instruments with this product will increase eye hazard.
The use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This unit uses CD-ROM discs with the following mark.

When you use this unit as an audio CD player, use compact discs with the following mark.

This label is located on the drive unit's internal chassis.

Dieses Etikett befindet sich auf dem inneren Chassis des Laufwerkes

This label is located on the top of the drive.

Dieser Aufkleber befindet sich an der Oberseite des Gehäuses.

FCC Compliance

If you have any questions about this product,
USA:
You may call: Sony Customer Information Service Center at (800)588-3847 or visit Sony web site: http://www.sony.com/storagesupport.
Other Countries:
You may call the phone number in your country written in the warranty card.

DECLARATION OF CONFORMITY

According to 47 CFR Part 2 & Part 15
(Tested to Comply With FCC Standards)

TRADE NAME:	SONY
RESPONSIBLE NAME:	SONY ELECTRONICS Inc.
ADDRESS:	1 SONY DRIVE, PARK RIDGE, NJ. 07656 U.S.A.
PHONE NO:	201-930-6972

HEREBY DECLARES THAT THE PRODUCT

PRODUCT NAME:	8X / 4X / 32X max CD-RW Drive
MODEL NUMBER:	CRX140E OR CRX0811

SUPPLEMENTARY INFORMATION:
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

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

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

THE PARTY RESPONSIBLE FOR PRODUCT COMPLIANCE:
Sony Electronics Inc.
1 Sony Drive
Park Ridge, NJ 07656
(201) 930-6972

Please Record Responsibly. Before copying anything onto a CD-RW or CD-R disc, please be sure you are not violating Copyright laws. Most software companies allow you to make a back-up or archive copy of software. Check your software's license agreement for specific details.

SAFETY NOTICE

1. Do not install or operate the product in high temperature, humidity or dusty environment.
2. Do not attempt to open the cover to repair the product yourself.
3. Never spill liquid of any kind on the product.
4. Always follow instructions on this manual under operating the product.
5. To prevent exposure to laser emanations (harmful to human eyes), do not attempt to disassemble this unit.
6. Hold CD discs by their edges. Do not touch the surface of the discs.
7. The drive is designed to be incorporated into a computer-based system or unit which has an enclosing cover. Using the drive alone or in any other configuration is prohibited.

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

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Introduction Chapter 1

Please read this manual before using the drive in order to take you step-by-step through the process of setting up and installing the CD-RW drive.

Precautions

* Do not attempt to open the drive and service it. Removing the cover may cause exposure to harmful laser beam and electrical voltage. User is recommended to get service by returning the defected drive back to the original vendor where the drive is purchased.
- Use the original packing for transporting the drive or sending back for service. The original packing were designed and tested to protect your drive under rough condition.
- Do not put this CD-RW drive in direct sunlight, on heat units, or near electrical appliances which draw large amounts of current.
- Use a soft, dust-free cloth for cleaning your drive. Keep your drive away from moisture or liquids including water, cleaning-fluids, or solvents.
- Keep your CD-R/RW disc clean. Using soft, dust-free cloth to clear the surface on the CD-R/RW disc before recording will improve the burning data integrity.
- Do not drop or jolt the drive.
- Keep the area around the CD-RW drive clean from dust, smoke, and other contaminants.
- The copyright law of each country governs the reproduction of copyrighted works. The person using the CD-RW drives may be liable for its use to make unauthorized copies of copyrighted works.
- It will increase the success rate for copying the data from HDD, instead of copy the data by "copy on the fly mode". Therefore we recommend user reserving sufficient buffer spate (at least 800 MB).

CD-R and CD-RW

CD-R is the term used to denote CD-Recordable media. CD-R discs are recorded permanently. Once information is written, it cannot be erased. Data can be added until the disc is full. CD-R is good for creating archived information that need not be changed, or for distribution, because the price of CD-R media has dropped rapidly in the last few years.

CD-RW is the term used to denote CD-ReWritable media. CD-RW discs can be written to many times. CD-RW media is rated for one thousand different writes to the media. CD-RW is perfect for personal file storage or for creating reliable backups that can be added to as necessary, and even rewritten as your backup scheme requires.

While CD-RW media is more expensive than CD-R media it has a lower cost per megabyte than other competing technologies, such as Magneto–Optical or even magnetic removable media drives.

CD-RW drives are very versatile for transporting information to both older and newer CD-ROM and DVD-ROM drives. CD-RW media can be read by newer CD-ROM and DVD-ROM drives. These newer drives are known as Multi-Read (MR) drives. And even though CD-RW media cannot be read by older CD-ROM drives, the Sony CD-RW Recorder can write to CD-R media which can be read by standard CD-ROM drives and Audio CD Players.

How CD-R and CD-RW work

CD-ROM drives (CD-R and CD-RW drives as well) read the one and zero bits by difference in reflectivity. Mass produced Compact Discs are created by stamping "pits" in the CD. These "pits" reflect differently than the "land" which is the area between "pits."

CD-R drives work by using a laser beam to heat the recording layer, causing a chemical reaction in that spot so CD-ROM players will see this as a "pit" and the unburnt area as "land."

CD-RW uses what is known as a "Phase Change" technology. In the CD-RW media is a substance which can be changed from an amorphous "mark," that very closely resembles the pits of a stamped CD, to a crystalline state which resembles "land." The laser beam of the Sony CD-RW Recorder Drive changes the crystalline state to the amorphous state by use of a laser to quickly heat the spot on the disc, forming a mark. To change the amorphous state back to the crystalline state, the laser beam uses a lower power setting to transition the mark back to the crystalline "land."

Performance

The CD-RW Recorder drive is capable of writing CD-R discs at 8X speed and CD-RW discs at 4X (quad) speed. Quad speed or 4X means that the drive can write (also called record or burn) a CD-RW disc at 600 kilobytes per second. This rate allows the drive to record a full 650 megabyte CD-RW disc in about 18 minutes. At 8X speed the drive can write at 1200 kilobytes per second, or record a full 650 megabyte CD-R disc in only 9 minutes.

The drive can also record CD-R discs at quad speed (4X) as well as record CD-RW and CD-R discs at double speed (2X), and *even record CD-R discs at single speed (1X)*.

The drive is a multi-function device. Since the drive is also capable of reading at up to 32X Max. (4,800 kilobytes per second) it is a good general use CD-ROM drive as well as recorder.

The speed at which a CD-ROM is written does not affect the speed at which that CD-ROM can be read. For example, a CD-ROM which was written at 2X can be read at 1X, 2X, 4X, 8X, 12X, 24X and so on.

Buffer

The Spressa CD-RW Recorder drive has a two or four megabyte data buffer, which reduces buffer underruns when writing to CD-RW and CD-R media with some software. Buffer underrun is a condition where the drive's buffer runs out of data while the CD-R or CD-RW media is still being written. The recording of a CD is a system intensive process with some software, and the recorder needs a constant stream of data. A buffer underrun occurs when the data stream to the recorder is not fast enough to keep the recorder's buffer full, causing the recording to abort.

CD Formats Supported

The drive records these popular CD formats:

- **CD-Digital Audio**; the format used for audio CDs, playable on audio CD players.
- **CD Extra**; Audio and data in multi-session format.
- **CD TEXT**; Audio CD with album name; song titles encoded. CD TEXT information is displayed on CD TEXT Compatible CD Players and CD-ROM drives.
- **CD-ROM** (Mode 1); the format used for most CD-ROM applications.

- **CD-ROM XA** (Mode 2 Form 1 and Mode 2 Form 2); CD-ROM Extended Architecture. This standard was created for smoother playback of multimedia content.
- **CD-I*** (Mode 2 Form 1 and Mode 2 Form 2), **CD-I Ready**; CD-Interactive is used for home entertainment systems.
- **CD-G**
- **Karaoke CD**
- †**CD-Bridge**; a format for a mixture of Kodak **Photo CD**s and **Video CD**s, playable on TV set top players and personal computers.
- †**Photo CD** (single and multisession); Kodak Photo CD.
- **UDF**
- †**Video CD**; playable on TV set -top video CD Players and most DVD systems.

* The drive does not have the necessary audio circuitry and decoding functions for CD-I playback, but can read and record.

† With additional software.

Recording Methods

The drive has the capability to use several different recording methods. The descriptions of these methods in this manual are overviews of the subject. The methods are covered in greater detail in the software documentation.

- **Disc at Once**; this is a recording method in which the entire disc is written in a single pass. Data cannot be added at a later time.
- **Session at Once**; a complete session is written in a single pass (one at a time). Multiple sessions are typically recorded in Track at Once mode, where the track is written first, then the session information.
- **Track at Once**; a track can be copied to the disc incrementally (one at a time).
- **Multi–session**; several sessions can be written to a disc. Each session has at least one track.

- **Variable and fixed packet recording**; typically used by back-up software and Drive Letter Access software to add files and folders at a time, instead of tracks/sessions at a time.

Applications

CD-R and CD-RW discs are each ideal for slightly different applications. Both can be recorded with the Spressa CD-ReWritable recorder. CD-R discs can't be erased, but are compatible with standard CD-ROM drives and CD players. CD-RW discs can be erased and re-written, but have some inter-change limitations. Here are some typical applications for both discs:

	Data Distribution	Back-up	Archiving	CD Prototyping	Personal File Storage
CD-R	•		•	•	
CD-RW		•		•	•

Media Compatibility

Due to the different makeup of CD-R and CD-RW discs, these discs have different reflective qualities, and can be used with the following units.

CD-R	All CD-ROM drives and CD players
CD-RW	Multi-Read and CD-RW compatible CD-ROM drives and DVD-ROM drives

Most newer drives are Multi-Read drives which have the capability to read stamped CD, CD-R and CD-RW discs.

Recommended Media

CD-R:	Sony 74/80 min. CD-Recordable disc.
CD-RW:	Sony 74/80 min. CD-ReWritable disc.

To achieve trouble free 8X recording speeds, be sure the CD-R media is certified for 8X recording.

To achieve trouble free 4X CD-RW recordings, be sure the CD-RW media is certified for 4X recording.

Reliability

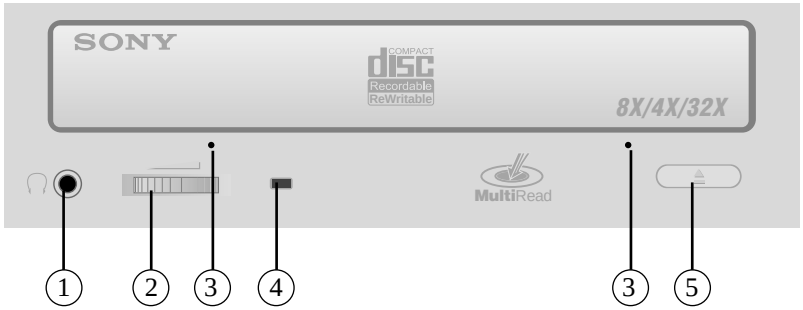
The CD-RW Recorder has a mean time between the following (MTBF) rating of as high as 100,000 power on hours (POH) at 25% duty. 25% duty means the CD-RW Recorder is in actual use a quarter of the time the unit is turned on. MTBF is an average failure rate based on the total power on hours divided by the drive Annual Failure Rate. A failure is any malfunction of the drive that prevents you from using it. This includes failure to power up, load or unload a CD, and read or write data. Faults are not considered failures when they relate to incompatible software or discs, or from mishandling and/or abuse.

Reliability ratings are derived from a large statistical sample, and are not indicative of the performance of a single unit.

Controls and Indicators Chapter 2

This chapter shows the connectors, controls, and indicator lights of the drive. For instructions on connecting and installing the drive to the computer, please consult “Chapter 3, Installing Your CD-RW Recorder Drive” located on page 15.

Using the CD-RW Drive



1. Earphone Jack Stereo mini-jack for headphones and powered speakers.

2. Volume Control Control volume of earphone jack. This control has no effect on rear panel audio output.

3. Emergency Eject In case the Eject button isn’t working, insert and push the end of a small paper clip into the hole to eject the tray.

Note: Turn off the power before doing this manual ejection.

4.Busy/Write LED The Busy / LED will be flashing while the CD-RW drive is busy.

LED light indicated CD-RW drive is busy, when turning power on, detecting disc activity or doing reading. LED blinking indicates data is writing.

5. Disc Tray The user can open or close the disc tray by pressing the Open / Close button.

6. Open/Close This is a toggle button. When pressed, the DVD-ROM drive will either open the door and tray out of the disc, or tray in the disc and close the door.

Busy Indicator LED

The Busy Indicator LED shows the condition of the driver.

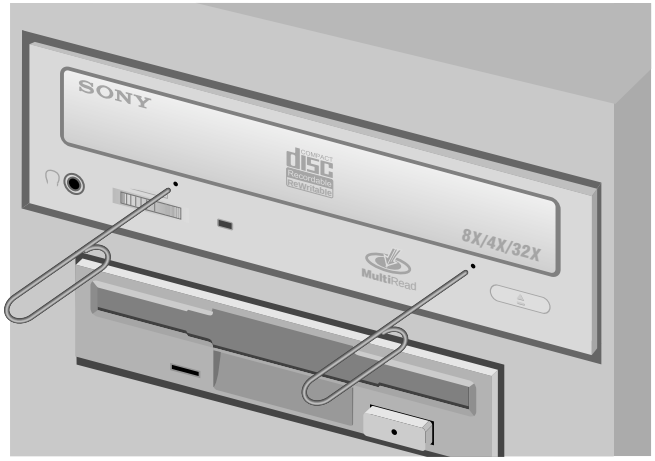
- When the Busy Indicator light is on full amber, it means the drive is seeking, playing audio, or reading.
- When the Busy Indicator light is flashing amber, it means the drive is recording a disc, or erasing a CD-RW disc.

Insert/Eject Button

Pressing on the eject button when the power is on will eject the CD. Depending on the Software being used with the drive, this button may not appear operational. Some of the software provided with the drive will lock the tray in so that the eject button will not eject the tray, for example, during a write operation.

Emergency Eject Hole

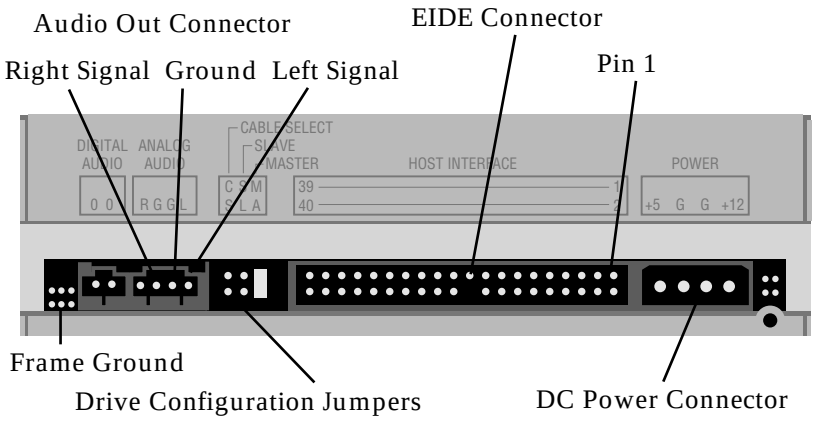
In the event that a CD cannot be ejected with the Eject Button and no software is controlling the drive, an emergency eject operation will eject the CD tray. Insert a small metal poker, such as an unbent paper clip into the opening, until it presses against the manual eject mechanism. You will feel the mechanism eject the CD tray. Use this method only when the other method of ejecting a CD, the Eject Button, is not working.



Headphone Jack/Volume Control.

To listen to an audio CD from the CD-ROM unit you may insert a standard headphone cable into the headphone jack. If there is a audio CD player utility installed on your PC, you can listen to audio CDs directly from the drive. The software functions like a typical CD player, letting you choose tracks to play, etc. The audio can be heard through your PC's speakers if you connect the audio out connector of the drive to the CD input of your sound card. The volume control on the front panel controls headphone volume only.

Rear Panel

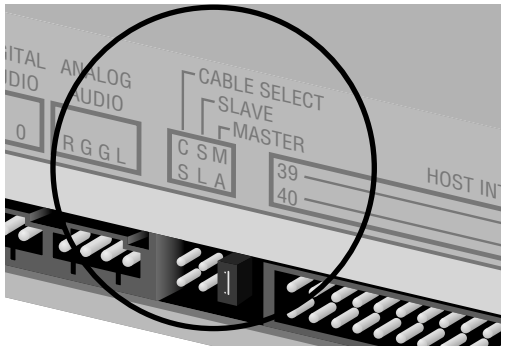


EIDE Connector

The drive uses a standard 40-pin IDE connector to be attached to an Enhanced IDE / ATAPI port on the motherboard. See Chapter 3 which describes how to connect your drive to your PC.

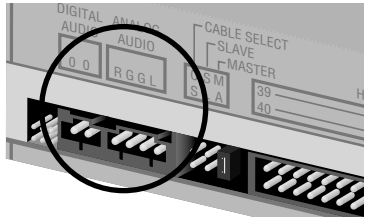
Drive Configuration Jumper

The drive configuration jumpers set your drive to be a master or slave drive on the EIDE port. The default position is with the jumper in the Master position. To set the drive as a slave drive, place the jumper on the Slave position. The third jumper is for Cable Select.



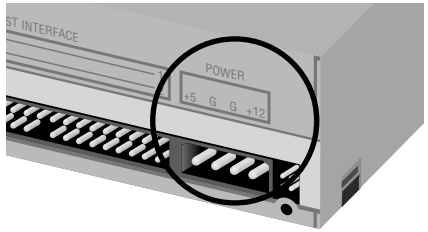
Audio Out Connector

This connector provides two channel, analog line level audio output which may be connected to a sound card.



DC Power Inlet

The drive attaches to your PC's standard power cable.



General Use Suggestions

The drive is intended for installation in a PC and should be used in an environment suitable for computer equipment. Dust, moisture and lack of adequate ventilation are common causes of device failure. You should install your drive in a location which is:

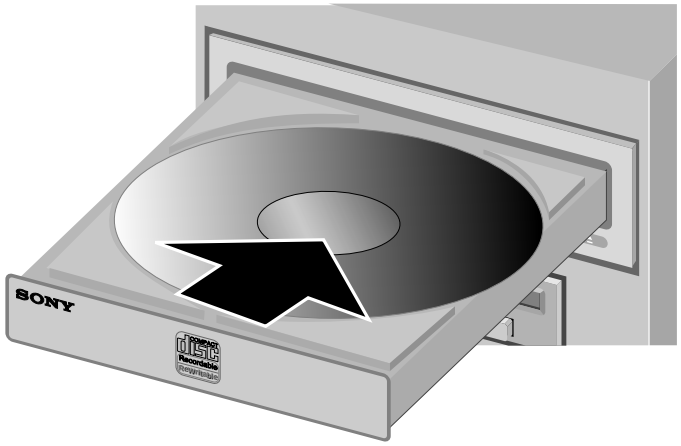
- Clean
- Dry
- Well Ventilated
- Dust Free
- Out of Direct sunlight

Inserting CD Discs

Put the writable/readable side of the CD media facing down in the tray, the label side up.

Press the Insert/Eject button to retract the tray.

CAUTION: Insert only CD discs, CD-R or CD-RW media into the drive CD tray to avoid damaging the unit and voiding the warranty.



Installing Your CR-RW Recorder Drive Chapter 3

This chapter describes the installation procedures for installing the drive in a PC.

Requirements

- Pentium® 233Mhz or faster PC Computer
- At least 32 MB RAM.
- Windows® 98/SE/Me™/2000 or Windows NT® 4.0.
- Bus mastering EIDE connection.
- Hard disk drive with less than 12ms access time and sustained throughput greater than 2MB per second.
- Transmission rate 2MB/sec or more.

NOTE: *Some high-speed hard drives are equipped with an "Auto Thermal Recalibration" function. Please disable it in the BIOS setup to avoid writing errors (Buffer Under-run).*

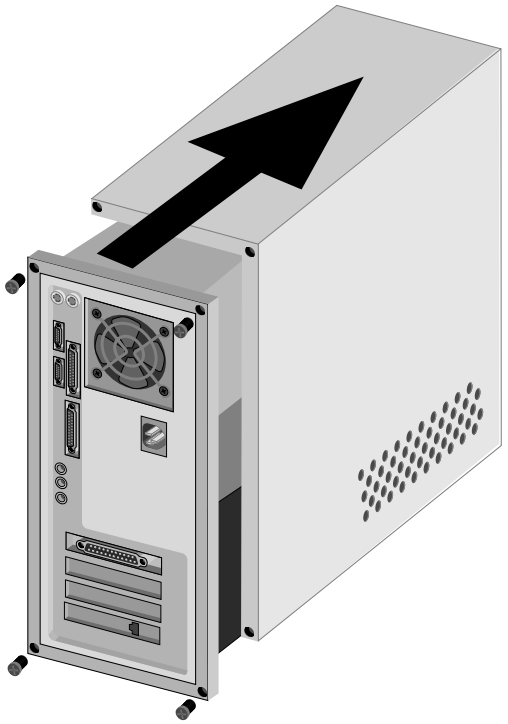
Installation Instructions

1. Unpack all essential materials and verify that all items are present. A list of items is in the Quick Start guide.

2. Save your work, and shut down your PC.

3. Remove any accessories and cables, including the power cable.

4. Remove the cover of the computer
   There are precautions you should be aware of any time you are opening the computer:



Precautions Before Opening the Computer

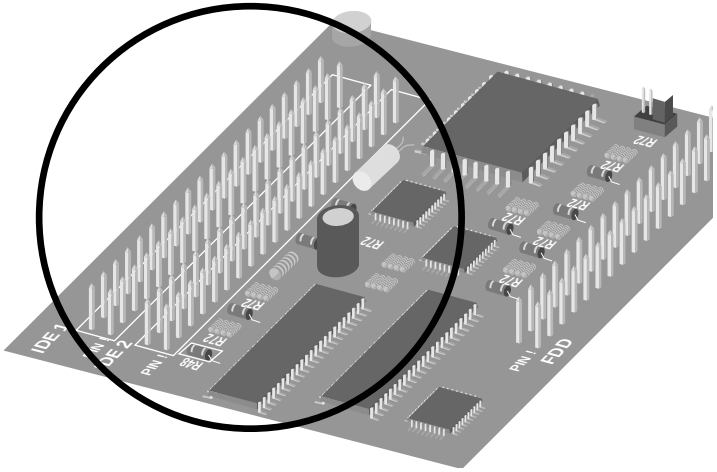
- Some manufacturers may void your warranty for the computer.
- As with any time you make significant changes to your system, please be sure your data is backed up.
- Shut down and turn off the computer.
- Disconnect all accessory cables, including the power cable.

Follow Electrostatic Discharge procedures any time you open the computer. These procedures include:

Electrostatic Discharge Precautions

- ❑ Make sure the computer is OFF when performing any removal or installation.
- ❑ Remove the power cord.
- ❑ Wait ten minutes before any removal or installation if the computer has recently been powered on.
- ❑ For best protection use a grounding strap when performing the installation.

5. Locate the EIDE Connector on your computer motherboard.

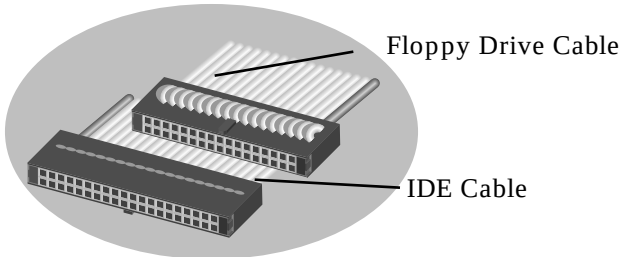


PC motherboards have two EIDE connectors. If you are unsure whether your computer supports Enhanced IDE, please consult your computer's documentation or

the computer's manufacturer. Different computer manufacturers have the EIDE connectors in different locations. The configurations inside the machine are usually clearly marked. However, the easiest way to locate the EIDE connector is to follow the cable as it is connected to existing CD drive or hard drive.

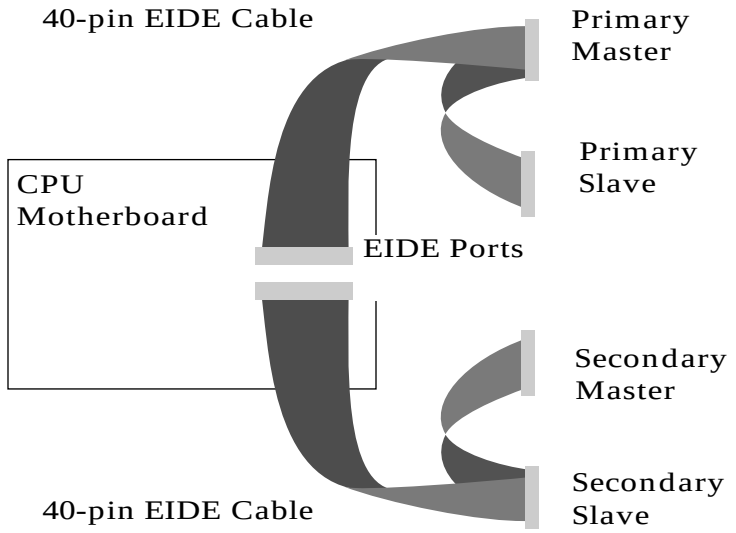
How to recognize EIDE cables.

There are generally two types of data cables used internally in PCs. These data cables are Floppy Drive cables which have 34 pins and IDE cables which have 40 pins. EIDE and IDE cables are the same. EIDE is a standard which has an enhanced command set which contains commands for use with newer drives.



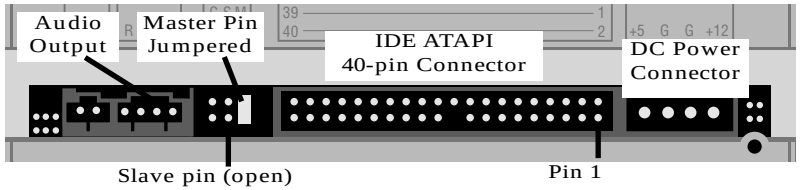
6. Set the drive configuration jumpers.

   Each IDE port can support two devices. The position of the devices does not determine whether the device is Master or Slave. Master / Slave is determined by the configuration jumpers on IDE drives. Please check the Master / Slave jumper position of each device and consult the manufacturer's user's guide to avoid conflicts.
   You may have other devices attached to your Primary and

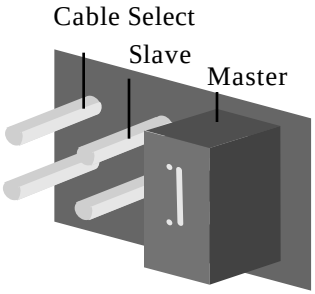


   Secondary IDE ports such as a hard disk, DVD-ROM or both. Typically there is writing on the logic board for "Pri" and "Sec" or "1" and "2." Should you have trouble determining which IDE port is Primary and which is Secondary, refer to your computer user's guide.

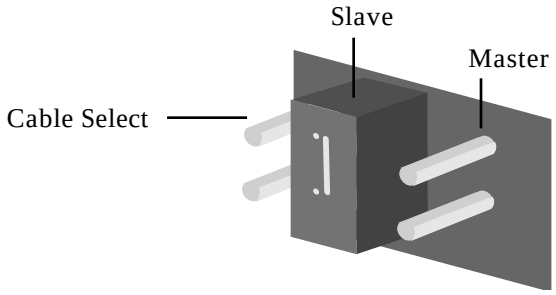
The drive comes pre-configured as an IDE Master device as shown below with the Master pin jumpered.



If the drive is the only drive on the EIDE port then the drive should be the master drive. To make the Drive the master drive you put the jumper block on the Master pin position

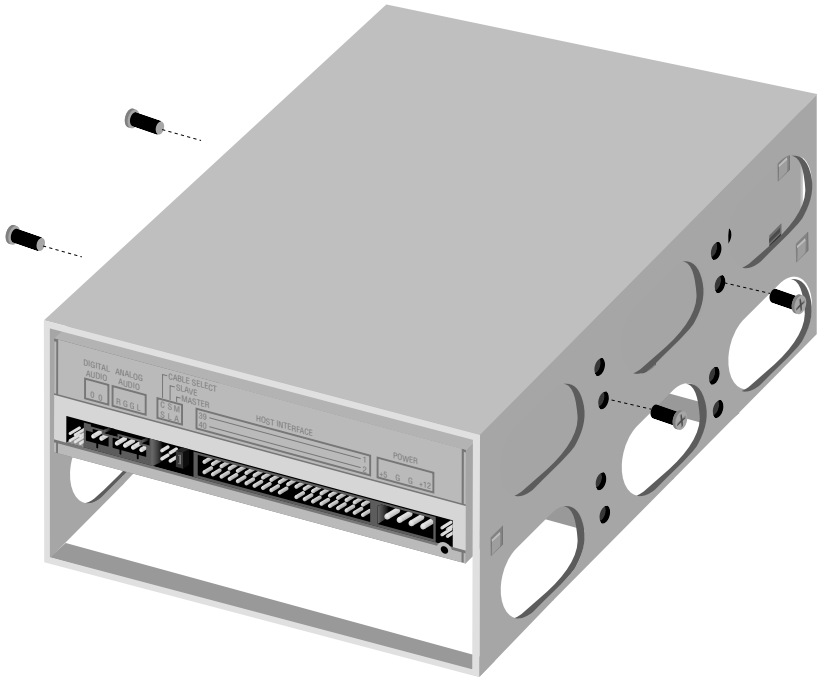


If the drive will be using the same port with a hard drive, then the hard drive should be set as the master and the drive as the slave drive. To make the drive the slave drive you put the jumper block on the Slave pin position.

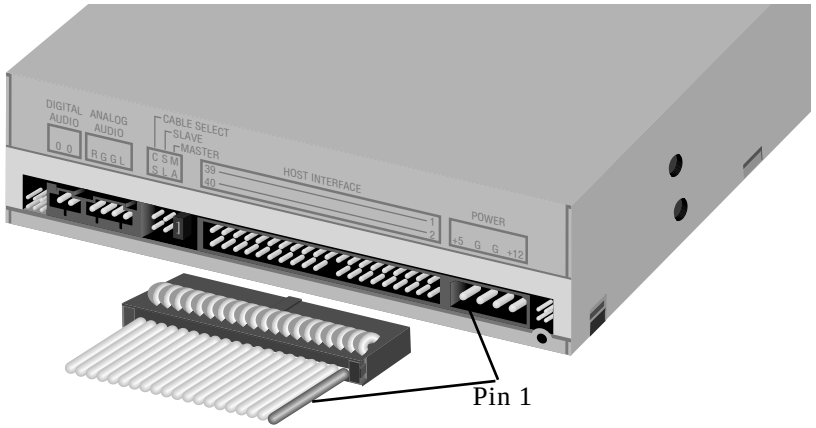


7. Install the drive.

   To install the drive, position the drive in the drive bay so that the screw holes of the drive are aligned with the screw holes in the drive bay. Then tighten the screws until they are firm. Do not over tighten the screws.

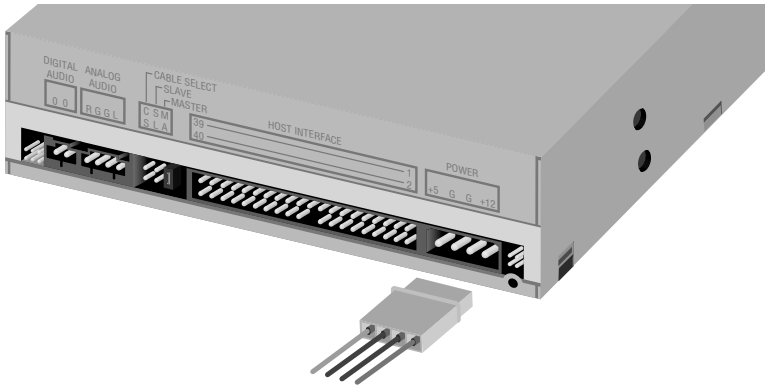


8. Attach the IDE cable



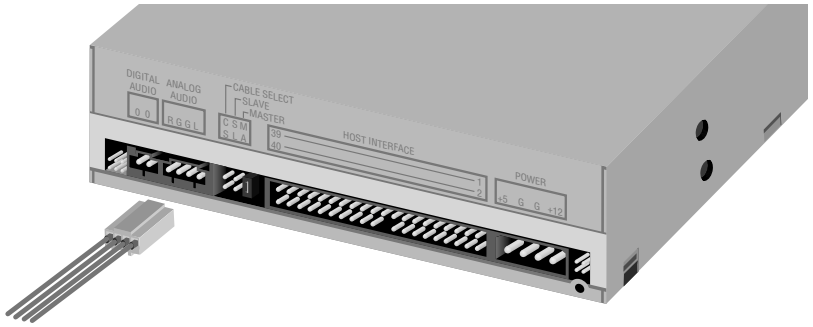
Attach the EIDE cable so that the red line that signifies Pin 1 of the cable is aligned with Pin 1 on the drive. Although the cables that Sony includes with the unit are keyed so that they may only be installed properly, other cables may not be keyed the same. If you use your existing cable, please be sure to align it properly. The red line side of the cable goes to the set of pins closest to the power connector on the drive.

9. Attach the DC power cable.
   Plug your standard power connection to the drive.



10. Connect the audio cable.

    If you have a sound card, you can attach the audio cable to the audio out connectors.



11. Power up system and Install the CD-Recording software that came with your drive.

12. Restart System.

If there are any difficulties in completing the operations outlined in this manual, please see the troubleshooting guide in Chapter 4. You may also contact the Sony Technical Support Center.

Troubleshooting Chapter 4

This Chapter discusses the basics of troubleshooting the CD-RW Recorder Drive.

A few words about CD-ROMs

The laser in a CD reads the difference in reflectivity from one spot to the next. This difference in reflectivity is simply created from a difference in the depth of pits either burned or stamped into the CD-ROM Media.

Large production runs of CDs are stamped to create the pits. The Sony CD-RW Recorder Drive burns recordable CD media, or alters the state of the substance within CD-RW media to change its reflectivity by means of a finely controlled laser beam

The pits that the laser of the CD reader senses are either the one or the zero bits that are interpreted as data, music, or photographs depending on the format with which the disc is recorded. The CD is covered in a transparent shield that the laser can read through or burn through. Scratches, smudges, or particles on the bottom read / write surface can impede the functioning of your CD-RW, CD-R or CD-ROM device.

If you meet any trouble during installation or normal use of your CD-RW drive, please refer to the following information.

Read Problems

Symptom	Possible Causes	Solutions
No CD-RW drive recognition.	• IDE cable and the CD-RW drive are not connected properly.	• Ensure that both connectors of IDE cable is properly connected to the IDE ports on the main board and CD-RW.
	• Conflicts with other IDE devices.	• Ensure the Master / Slave device setting of CD-RW if not conflict with the other IDE device connected to the same IDE port.
	• Power is not switched on.	• Check if LED of your CD-RW drive is lit. If not, there is no power.

Symptom	Possible Causes	Solutions
No sound from external speaker when you're playing a music CD.	• The sound board isn't working properly.	• Connect speakers to the headphone jack of your CD-RW drive while playing a music CD. If you hear sound from the speakers, the drive is working fine. • Ensure that your CD-RW drive is correctly linked to the sound board. • Check if the (MCI) CD-Audio driver is installed.
Low sound level from CD-RW drive.	• Improper level setting in Windows audio mixer. • Improper audio cable connection between CD-RW drive and sound board.	• Check if the Masters, CD and Line levels in every audio mixer are correct. • Ensure the audio cable is properly connected to the CD or Line input of your sound board.

Symptom	Possible Causes	Solutions
Cannot view photo CD discs. Can read only first session of a multi-session disc. Receive error messages while reading photo CD images.	• Bad photo CD disc.	• Try to play another photo CD disc and see if it reads fine. If it works, you should replace the defective disc.
Cannot read the former session of the CD-RW disc which has been written at least twice.	• "Load Contents" or "Import Session" was NOT clicked on the softwear.	• If recorded without checked "Load Contents" or "Import Session", it is impossible to read. But when using utility software such as "Session Selection" from Adaptec, the former session can be read.
Read error occurs.	• Defective CD-ROM disc.	• Deep scratches, fingerprints or other contaminants on the discs surface can disable the drive from reading data. Always keep it clean.

Symptom	Possible Causes	Solutions
Cannot read the former session of the CD-RW disc which has been written at least twice.	• Music CD inserted.	• Because audio compact discs do not have computer data, typing computer commands while an audio CD is in your drive will result in an error message.
Read error occurs.	• Disc inserted upside down.	• Remove the disc from tray and reinsert it with the label side up.
Excessive noise when reading.	• Eccentric disc loaded.	• Replace it by another one.
	• Seal attached on the surface.	• Detach the seal very carefully. Don't make any scratches.
No operation.	• No power.	• Check if the power cord is connected securely to the connector.
	• SIDE cable isn't connected properly.	• Ensure that the IDE cable and connectors are not damaged, bent or dented. Check especially the pins.

Symptom	Possible Causes	Solutions
Cannot eject tray.	• Eject locked by software.	• When you're working under Windows 95/98/NT 4.0, check if locked on the CD-RW properly.
	• CD set incorrectly into tray.	• Insert emergency eject stick into the emergency eject hole and eject the tray. Use a pair of tweezers or pliers if it won't eject with emergency eject stick.
Can read only the first session of a multi-session disc.	• "Close Session" was not selected at the previous writing.	• Additional session cannot be read because the previous session was not closed. Rewrite on other CD-R/RW media.

Symptom	Possible Causes	Solutions
Can not initialize CD-RW disc written by Packet Write with other CD-ROM drive.	• The CD-RW disc is in the drive formatted with "Random Write".	• A CD-ROM drive cannot initialize/read any CD-R/RW disc formatted by "Random Write". If you want to read the disc, please use a CD-RW drive, or download from Adaptec WEB site and install UDF READER ON YOUR PC, which enable CD-ROM drivers to read "Random Write".

Write Problems

Symptom	Possible Causes	Solutions
Cannot write.	• Using other authoring software which not supports your CD-RW drive.	• Use the authoring software provided with the CD-RW drive. When using other software, ensure your CD-RW drive is supported by contacting the software supplier.
	• Disc inserted upside down.	• Reinsert the disc with label side up.
	• Short of Hard Disc capacity.	• Generally 1.2 to 2 times the size of the write data is required. This may vary according to the write method.
	• No power.	• Check if the power cord is securely connected to the connector.
	• IDE cable isn't connected properly.	• Ensure that the cable or IDE connectors are not damaged, bent or dented. Check especially the pins.
Writing errors occur (Buffer under-runs)	• Network used.	• When running mouse, screen saver moving or other applications or writing in a network environment, errors may occur due to lack of CPU resources in PC.
	• Mouse moved or window screen saver activated while writing.	• Rewrite after log-off from the network.
	• Other application running.	• Deactivate the screen saver or power saving mode.
		• Quit other applications other than the authoring software.

Symptom	Possible Causes	Solutions
Writing errors occur (Buffer under-runs)	• Short of PC memory.	• Due to short of main memory in PC, swapping of hard disc space may have occurred. If swapped data from the hard disc may cut off causing buffer under-runs.
		• Increase main memory capacity.
	• "Auto thermal re-calibration" triggered.	• Disable "Auto thermal re-calibration" in the BIOS setup.
		• Use another Hard Disk if can not disable it.
	• Defective CD-R/RW media.	• CD-R/RW media may be dirty, scratched or damaged. Rewrite on another CD-R/RW media.
	• Short of Hard Disk capacity.	• Generally 1.2 to 2 times the size of the write data is required. This may vary according to the write method.

Symptom	Possible Causes	Solutions
No drive recognition.	• Bad connection between IDE cable and your CD-RW drive.	• Ensure that cables or IDE connectors are not damaged, bent or dented. Check especially the pins.
	• Conflicts with other IDE devices.	• Ensure the Master/Slave device setting of CD-RW if not conflict with the other IDE device connected to the same IDE port.
	• Using other authoring software which not supports your CD-RW drive.	• Use the authoring software provided with your CD-RW drive. When using other software, ensure your CD-RW drive is supported by contacting the software supplier.

Symptom	Possible Causes	Solutions
Cannot add writing on CD-RW.	• Wrote with other authoring software.	• If different authoring software is used comparing to the previous writing, errors may occur. Use always the same authoring software.
	• Short of CD-R/RW capacity.	• Capacity of CD-R/RW media is limited to 650MB (74 min-type) including lead-in, lead-out and TOC data. Use a new CD-R/RW media if the capacity is insufficient for the additional data.
File name error, mismatch Windows95/98 and Windows NT 3.51.	• Long file name used in writing.	• Unlike Windows95/98/Me™/NT 4.0 long file names cannot be used in WindowsNT 3.51. Writing in the authoring software with a “Romeo” or “Juliet” designation results in character error. When working in WindowsNT 3.51, write the file names with DOS type (8+3 format).

Symptom	Possible Causes	Solutions
Can not write at highest speed.	• CD-R/RW media not compatible with highest speed.	• Use the highest speed compatible discs (8x CD-R or 4x CD-RW) or write with lower speed.
	• Buffer under-run occurs.	• Refer to the “Buffer under-run” item.
	• Defective CD-R/RW media.	• CD-R/RW media may be dirty, scratched or damaged. Rewrite on another CD-R/RW media.
	• Using other authoring software not bundled with your CD-RW.	• Use the authoring software provided with your CD-RW drive. When using other software, ensure your CD-RW drive is supported by contacting the software supplier.

Contacting Technical Support Appendix A

Whenever you have any difficulty with your drive, please follow the troubleshooting suggestions in this manual and in the software manuals. Please keep track of the steps you have taken with as much information about your computer system as you can. If you have any trouble resolving the problem, please call the Sony Technical Support Center and convey your troubleshooting steps.

Please have your model number, serial number, date of purchase and sales receipt available when you call Technical Support the first time.

Technical Support can be reached 8:00am to 8:00pm, Central Time, Monday through Saturday. Please have your model number, serial number, date of purchase and receipt handy before calling Technical Support. Free telephone support is offered for 90 days from your first call.

Sony Computer Peripherals Technical Support Phone
(800) 588-3847

Sony Computer Peripherals Technical Support Web Site
http://www.sony.com/storagesupport

Specifications

CRX140E Drive

HOST INTERFACE
Enhanced IDE / ATAPI

READ FUNCTION, Acceptable Discs
CD-ROM mode-1 data discs, CD-ROM XA discs,
CD Audio discs, Mixed Mode, CD Extra, CD Text,
CD-I discs, CD-I Ready Discs,
Photo CD (Single and Multisession), Video CD,
CD-R and CD-RW discs

WRITE FUNCTION, Applicable Formats
CD-ROM (Mode 1), CD-ROM XA, CD-Audio, Audio-combined
CD-ROM - Mixed Mode, CD-I, †Video CD, CD Text, CD Extra

WRITING METHOD
Disc at Once
Session at Once
Track at Once
Multi-session
Fixed and Variable Packet Writing

WRITE / READ SPEED

Read (CD-ROM / CD-R):	1X, 2X, 4X, 8X, 13~32X (CAV) speed
Read (CD-RW):	1X, 2X, 4X, 8X, 8~20X (CAV) speed
Read (unfinalized CD-R / CD-RW):	1X, 2X, 4X, 8X, 8~20X (CAV) speed
Write (CD-R):	1X, 2X, 4X, 8X speed
Write (CD-RW):	2X, 4X speed

SUSTAINED DATA TRANSFER RATE

150 Kbytes / sec.	Mode 1	(1X, read / write)
300 Kbytes / sec.	Mode 1	(2X, read / write)
600 Kbytes / sec.	Mode 1	(4X read / write)
1,200 Kbytes / sec.	Mode 1	(8X read)
2,400~4,800 Kbytes / sec.	Mode 1	(13~32X, CAV)

BURST DATA TRANSFER RATE
16.7 Megabytes per second (ATA PIO Mode 4)
16.7 Megabytes per second (ATA Multi Word DMA Mode 2)

AVERAGE ACCESS TIME (including Latency)
150 ms [13~32X, CAV]

†Video CD requires additional software.

BUFFER MEMORY (Read / Write)
4 Megabytes

DISC DIAMETER
12 cm (8 cm Read Only)

ROTATIONAL SPEED INNERMOST TRACK:

600 rpm	(1X)
1200 rpm	(2X)
2400 rpm	(4X)
4800 rpm	(8X)
7000 rpm	(13~32X, CAV)

ROTATIONAL SPEED OUTERMOST TRACK:

230 rpm	(1X)
460 rpm	(2X)
920 rpm	(4X)
1840 rpm	(8)
7000 rpm	(13~32X)

ENVIRONMENTAL CONDITIONS
Temperature and humidity

Operating: 5° C to 45°C Maximum (41°F to 104°F)
no condensation

Transportation: -40°C to 60°C (-40°F to 140°F
10% to 90% relative humidity
(no condensation within 72 hours.)

Temperature and humidity gradients: 10 C / hour, 10% / hour

MTBF
100,000 POH (duty 25%)

MOUNTING
Horizontal or vertical

POWER REQUIREMENTS
+5V DC (1.0A), +12V DC (1.2A)

DRIVE DIMENSIONS
146mm W x 203mm D x 41.4mm H

DRIVE WEIGHT
940 g.

Specifications

CRX0811 Drive

HOST INTERFACE
Enhanced IDE / ATAPI

READ FUNCTION, Acceptable Discs
CD-DA, CD ROM Mode-1,
CD- ROM / XA Mode-2 Form-1 and Form-2,
CD-I Ready Video-CD (MPEG-1),
Karaoke CD, Photo-CD, Enhanced CD,
CD extra, I-Track CD, UDF, and CD-TEXT.
CD-I Mode-2 Form-1 and Form-2

WRITE FUNCTION, Applicable Formats
CD-DA, CD-ROM Mode-1,
CD-ROM / XA Mode-2 Form-1 and Form-2,
Video-CD (MPEG-1), CD extra, UDF,
CD-TEXT and CD-I Mode-2 Form-1 and Form-2

WRITING METHOD
Disc at Once
Session at Once
Track at Once
Multi-session
Fixed and Variable Packet Writing
Track Reservation

WRITE / READ SPEED

Read (CD-ROM / CD-R):	4X, 8X, 13~32X (CAV) speed
Read (CD-RW):	4X, 8X, 8~20X (CAV) speed
Read (unfinalized CD-R / CD-RW):	4X, 8X, 8~20X (CAV) speed
Write (CD-R):	2X, 4X, 8X speed
Write (CD-RW):	2X, 4X speed

SUSTAINED DATA TRANSFER RATE

300 Kbytes / sec.	Mode 1	(2X, read / write)
600 Kbytes / sec.	Mode 1	(4X read / write)
1,200 Kbytes / sec.	Mode 1	(8X read)
2,400~4,800 Kbytes / sec.	Mode 1	(13~32X, CAV)

†Video CD requires additional software.

BURST DATA TRANSFER RATE
16.6 Megabytes per second (ATA PIO Mode 4)
16.6 Megabytes per second (ATA Multi Word DMA Mode 2)

AVERAGE ACCESS TIME (including Latency)
110 ms [13~32X, CAV]

BUFFER MEMORY (Read / Write)
2 Megabytes

DISC DIAMETER
12 cm (8 cm Read Only)

ROTATIONAL SPEED INNERMOST TRACK:

1200 rpm	(2X)
2400 rpm	(4X)
4800 rpm	(8X)
6600 rpm	(13~32X, CAV)

ROTATIONAL SPEED OUTERMOST TRACK:

460 rpm	(2X)
920 rpm	(4X)
1840 rpm	(8)
4800 rpm	(13~32X)

ENVIRONMENTAL CONDITIONS
Operating

Temperature:	5° C to 45°C
Humidity:	10% to 80% RH
Altitude:	0-3,500 m

Transportation

Temperature:	-35° C to 60°C
Humidity:	10% to 90% RH
Altitude:	0-12,500 m

MTBF
70,000 POH (duty 25%)

MOUNTING

Horizontal or vertical

POWER REQUIREMENTS

+5V ± 5% and less than 100m Vp-p ripple voltage.
+12V ± 10% and less than 200m Vp-p ripple voltage

CURRENT REQUIREMENTS

Spinning Up (Peak)

+5V 1.0 Amp
+12V 1.2 Amp

Seeking (Peak)

+5V 1.0 Amp
+12V 0.8 Amp

Reading (Average)

+5V 0.9 Amp
+12V 0.8 Amp

Sleeping (Average)

+5V 0.3 Amp
+12V 0.0 Amp

Sequential Write (CD-R/RW)

+5V 0.8 Amp
+12V 0.5 Amp

DRIVE DIMENSIONS

145.8mm W x 41.3mm H x 190.0mm D (±0.5)

DRIVE WEIGHT

1.0 Kg.

LASER

Type	Semiconductor laser GaAIAS
Wave Length	785±5 nm (at 25C)
Output Power (max)	26.0mW@Objective Lens

Glossary

Access times. The average amount of time to access an item of data.

Analog. (as opposed to digital) where digital is defined discrete items which can be reduced to zero and one bits, Analog is continuous, so on any graphic representation of Analog data there are an infinite number of points between any two points. Digital Approximates by adding data points.

Buffer. RAM Cache that is faster than the data is being delivered. Buffers are used so data may be stored and delivered to the receiving item as it is needed.

Burn a CD. Recording a CD-R. Because a laser is used to write a CD it is also known as burning a CD.

Burst transfer. The fastest a device can transfer, usually from its buffer.

CD-R drive. A drive that can write to recordable CD-R media.

CD-RW drive. A drive that can write to recordable CD-R and Rewritable CD-RW media.

CD-ROM drive. A drive that can read from CD media.

Data stream. The flow of data that accomplishes a task, usually related to moving data from storage to computer RAM or between storage devices.

Digital. Discrete information that can be broken down to one or zero bits.

EIDE. Enhanced IDE supports two IDE ports unlike IDE's single port. Commonly referred to as IDE.

Host. A device on the SCSI bus is either a host or target. The host is also known as the initiator.

kb kilobyte. Basically this means 1000 bytes, but is actually 1024 bytes.

kb/s kilobytes per second. Means of measuring throughput.

Kilobyte. See kb

Mb. Megabyte. Basically means one million bytes, but is actually 1024 kilobytes or 1024 X 1024 bytes which is 1,048,576 bytes.

Mb/s. Megabytes per second. Means of measuring throughput.

Megabyte. see Mb

Record a CD. Burn a CD, Writing a CD. Uses special CD-Recordable discs which can be altered by the laser in a CD-R drive.

SCSI. Small Computer System Interface. A Standard used for communication on PCs.

Source hard drive. The drive which contains information that will be written somewhere else. In CD recording, the source hard drive contains the information that will be written to the CD Recorder.

Sustained transfer. The rate which data can be transferred from one device to another. This rate is an average over a longer period of time than a burst transfer rate. Because the sustained transfer test is longer, it means the testing will take into account both reading or writing from the storage device's buffer, as well as from the media. Reading and Writing from the media is a much slower operation, so the sustained transfer test is usually a much better test for determining the usability of a device in a real application, such as recording a CD.

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