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Federal Communications Commission (FCC) Statement

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

FCC Warning

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

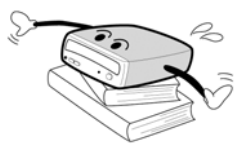
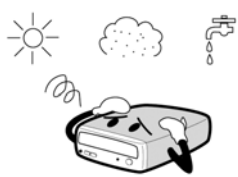
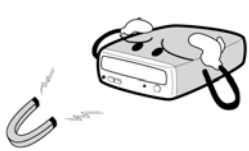
Table of Contents

1. Use Precautions

These precautions explain how to use the device correctly and safely, thereby preventing injury to yourself or to others. This section relates to your personal safety, and also helps you minimize the risk of damaging the device. Please read carefully before proceeding.

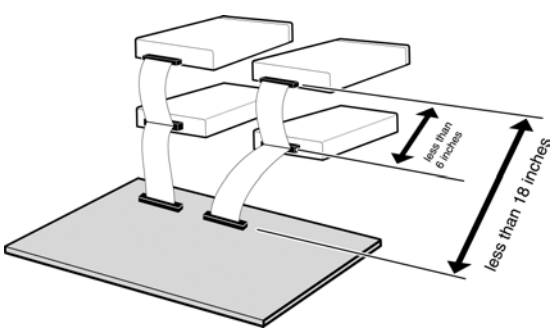
1.1. Warning for Safety

When you use AOpen DVD+RW/+R, please pay heed to the following

At the time of installation: As suggested in your specifications please do not install in an unstable position or in one that vibrates.	
Do not install in high humidity, direct sunlight, or damp conditions.	
Do not use near magnetic fields, or place near a television or a radio signal as the performance of the device may be affected.	
Do not open to try to repair as the laser may be harmful.	

- Do not move from a cool environment to a warm one, as this will abruptly change the temperature of the device
- When moving the device, remove any disc from the device because any harm caused to the disc may result in data loss.
- Prevent liquids or metals from entering the device. If this situation should occur please contact your reseller for advice.
- Do not use any evaporating solvents to clean the device. If a spray solvent does happen to spray on the device please use a cloth to wipe it clean, or use a neutral cleaner to dilute the solvent and wipe the device clean.
- When the device is reading/writing please do not interrupt power supply.
- Do not place damaged discs inside the device. In the winter do not use discs brought in from outside immediately but wait until they have reached room temperature.

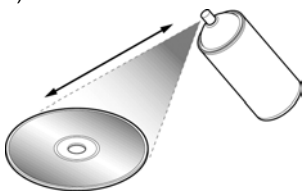
When installing the IDE device please pay attention to these following details:



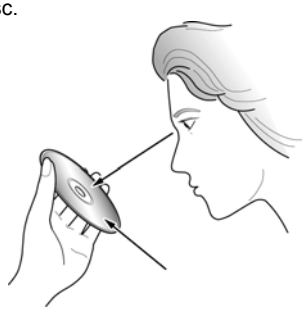
- Keep the IDE cable within 6 inches in length (15 cm).
- Before connecting the IDE cable, please make sure the power supply is off.

When cleaning CD / DVD disc, please note:

- Press the eject button to remove the disc
- Use compressed air to rid dust from the disc (spray with compressed air for about five seconds)



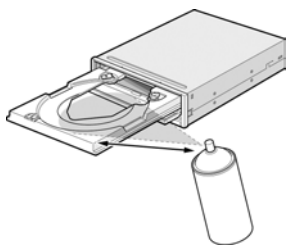
- When checking for dust, please make sure that your hands do not touch the surface of the disc.



Other points to pay attention to:

When moving the drive, please make sure that the disc has already been ejected.

- If you have not used the drive for some time, there will be dust collected on the cover and in the tray. Before using the drive spray with compressed air to clean it of dust.



- Before connecting all cables and wires, please make sure the power supply is off otherwise this may cause a short circuit.

1.2. Warning as to Use

This DVD+RW/+R drive together with software is a product for utilizing DVD+RW/+R recording media with rewriting, erasing and readout capabilities, as an external computer memory device. Except in the case where copying of CD-ROMs/DVD-ROMs or the like is especially recognized under the copyrights laws as being for the purpose of individual use by the customer or the like, or in the case where the customer has obtained permission to make copies from the right holder, reproduction of CD-ROMs/DVD-ROMs and copyright laws. Take notice that unauthorized copying may be subject to claims for damages and to penalties.

2. Introduction

2.1. Overview

Thank you for purchasing AOpen DVD+RW/+R drive. In this manual, we will explain how to install your DVD+RW/+R drive correctly. Please read this manual carefully before using the drive.

High Speed

AOpen's DVD+RW/+R drive offers unprecedented performance to handle today's demands by reading DVD's at up to 8x speed and writing DVD+RW discs at super 2.4x speed. This product writes a 4.7 GB disc in about 30 minutes. Beside, this product writes CD-R or CD-RW discs at fast 12x / 10x speed. To read CD's up to 32x speed.

Just Link

Just Link is a new technology developed independently by Ricoh that automatically prevents buffer under-run errors by predicting them before they happen. AOpen DVD+RW/+R features Just Link technology to enable stable writing in the following situations where buffer under-run errors may otherwise occur in a conventional drive.

- With high-speed writing,
- When some other operation is being performed on the computer during writing,
- When writing DVD+RW/+R/CD-R/CD-RW discs from a DVD-ROM/CD-ROM drive,
- When writing directly via network.

High Reliability

An improved anti-heat design and the OPC design boost recording reliability. Optimum Power Control continually monitors signal levels during recording and adjusts laser power to compensate for a dirty disc. This feature ensures a flat signal, significantly enhancing reliability.

High Compatibility

This product supports all major CD / DVD formats, offering full backward-compatibility through the huge installed base of CD-ROM/DVD-ROM drives and media. What's more, reordered DVD+RW/+R media can be played in a DVD player with multi-read feature, maintaining future compatibility.

2.2. Features

- E-IDE interface meets requirements of ATAPI Version 2.6
- Completely sealed door construction provides high reliability
- JustLink has made auto-avoidance against buffer under run errors possible
- Can read not only CD-R, CD-RW and DVD+RW discs, but also video CDs, music CDs, photo CDs, and CD-Text
- Can read CD data at 32x speed (4.8MB/sec data transfer rate), write data at 12x speed (CD-R, 1.8MB/sec data transfer rate.), re-write data at 10x speed *1 (High Speed CD-RW, 1.5MB/sec data transfer rate), and write data at 2.4x speed (DVD+RW/+R, 3.32MB/sec data transfer rate).
- Excellent media compatibility: The firmware of DVD+RW/+R drive has tuned up to the 99% compatibility.
- Support random write UDF in DVD+RW
- Legacy DVD-ROM and DVD Player can play DVD+RW/+R disc
- An improved anti-heat design means that no cooling fan is needed.
- Compliant with Orange Book Part II (CD-R) and Part III, Volume 2 V1.0 (CD-RW)
- Supports random UDF for easy writing to CD-R/RW discs
- Emergency disk unload
- Front panel rotary volume control
- Back panel included analog audio output and digital audio output

*1 The speed at which to write on the current standard CD-RW disks is 4x recording (at a data transfer rate of 600KB/second).

2.3. Format Compatibility

This DVD+RW/+R drive is compatible with the following formats:

"Read" means Data Transfer; "Play" means Audio Play back

	Write	Read	Play[*1]
CD-DA	✓	✓	✓
CD-ROM	✓	✓	
CD-Extra	✓	✓	✓
CD-ROM XA	✓	✓	
Photo CD[*2]	✓	✓	
CD-I[*2]	✓	✓	
CD-G		✓	
CD-Text	✓	✓	
DVD+RW	✓	✓	
DVD-RW[*3]		✓	
DVD-R[*3]		✓	
DVD+R	✓	✓	✓
DVD-ROM		✓	

[*1] Play means audio play back. Read means data transfer.
[*2] CD-I, Photo-CD requires special reader/player. Photo-CD writing requires Kodak license.
[*3] Theoretically allows if disc being read is compatible with DVD-ROM Not recommended and unwarranted by AOpen.

2.4. Type of Writing

Disc-At-Once

When only a single recording session (lead in/data/lead out) is to be recorded onto a disk, it is called "Disc-At-Once".

When using Disc-At-Once, no additional data can be recorded onto the disc, even if there is available capacity.

The advantage of this method recording is that it enables creation of discs that can be played back on almost any CD player or CD-ROM drive, because there are no links inserted between the data tracks.

Track-At-Once

When many sessions are to be recorded onto a disc, it is called “Track-At-Once”. If there is space available on the disc, additional data can be recorded onto it.

The advantages of this method include being able to record additional sessions onto a disc, and using a CD-ROM of backup data. (Refer to “Multi-session”.)

Session-At-Once

A "Session-at-Once" recording almost corresponds to a "Disc-at-Once recording", i.e. all data ("Lead-in", data area and "Lead-out" are written in one go.
The only difference is that the CD is not "finished", i.e. after a "Session-at-Once" recording you still have the possibility to write a further "Session" on the CD at a later date.

Multi-session

The recording of lead-in/data/lead-out is referred to as one session. The Disc-At-Once method is also referred to as “Single Session”, because the disc is only recorded once. A disc that has had multiple additional session recorded onto it using the Track-At-Once method is called “Multi-session”.

Packet Write

The Packet Write recording method was developed. It differs from Track-At-Once or Disc-At-Once in that data is recorded in small fixed sectors of 64k bytes, known as packets.

The advantages of this method are elimination in overhead per session and the elimination of buffer under run errors. This method, however, cannot be utilized for audio data. A number of formats, such as UDF and CD-R FS, can be used when recording using the Packet Write method.

3. Hardware Installation

The installation of this product is fast and easy. Please follow these instructions described below:

3.1. System Requirements

A PC system with the following features is highly recommended for ensuring a stable DVD+RW/+R performance.

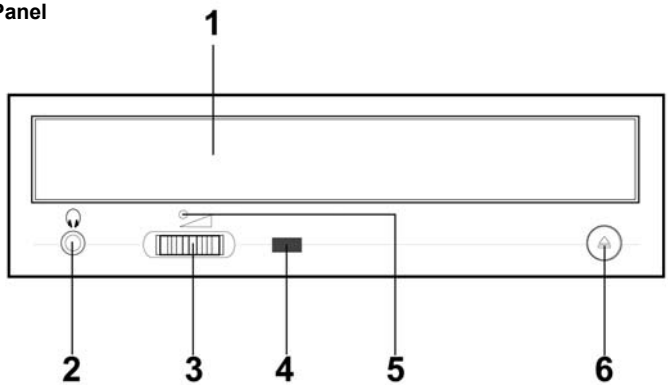
System requirements	CPU	We suggest using a Pentium !!! 850MHz or above (JustLink in use)
	Memory	128MB or above
	Operating systems	Windows 98, Windows 2000, XP Windows Me, NT WS4.0 SP5 or above
Interface	Compatible with Enhanced IDE, and Blank Primary Slave, Secondary Master, and Secondary Slave	
Hard disc	Average saving time is 19ms or lower, max data transfer speed is 33.3MB/sec; disc space 500MB or over	
Voltage	+12V or +5V voltage switches	

*CD-RW discs: perhaps are unable to be read in the CD-ROM. If this situation comes about it is likely that your CD-ROM is not compatible with multi-read please change to a Multi-read compatible CD-ROM or use your AOpen DVD+RW/+R.

*All Multi-read CD-ROM devices have the following features
(1) CD-ROM is able to read data created by optical heads
(2) CD-ROM will support the UDF specification (Packet Writing)

3.2. Hardware Instruction

Front Panel



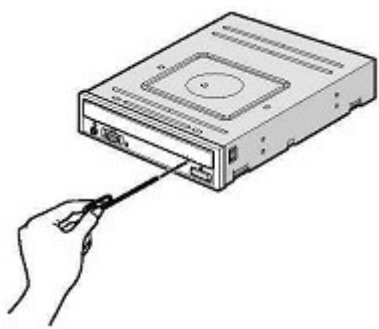
1. Disc Tray
2. Earphone Plug
3. Volume Control Dial
4. Indicator
5. Emergency Eject Hole
6. Eject Button

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

Name	Features
Disc Tray	This tray is for loading the CD disc. It will accept 120mm and 80mm discs. Please place the disc in the exact center of the tray
Earphone Plug	Please connect your earphones or small speakers to the earphone plug
Volume Control Dial	This controls the sound for the earphones but has no control over the output of the sound card volume

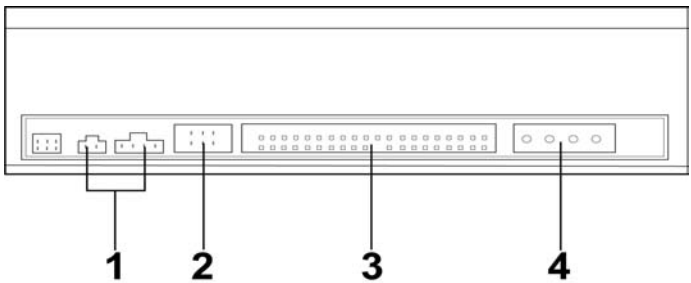
Indicator	When a disc has been ejected or is being saved the display light will shine. When a disc is being burnt, or a disc cannot be saved the display light will go out. When a disc is unable to be read, or the device is being repaired the display light will flash.
Emergency Eject Hole	When the power supply has been interrupted or it is impossible to eject a disc please use a pin to press the emergency eject hole so that the tray will eject the disc.
Eject Button	Pressing this controls the insertion and ejection of the tray.

Emergency Eject Hole



⚠ ***This function is only for emergency case. Do not use this function in usual case to prevent from mechanical damage.***

Rear Panel



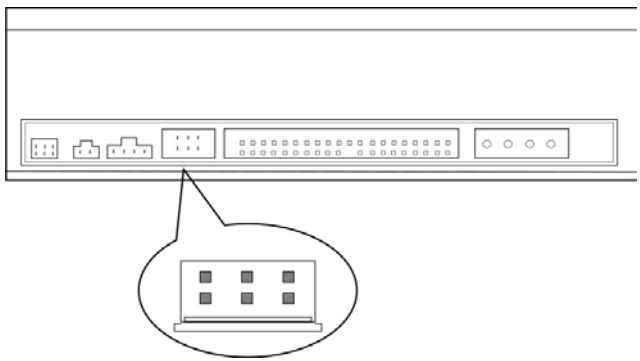
1. Audio Output Connector
2. Device Configuration Jumper
3. IDE Connector
4. Power Connector

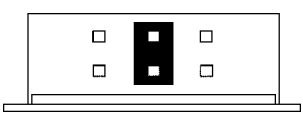
Name	Features
Audio Output Connector	Is able to be connected to a sound card audio input and can use a sound card to listen to a CD music
Device Configuration Jumper	Used when selecting the device configuration of E-IDE. Don't use jumpers to change anything besides the device configuration. Configuration changes become valid after power is turned off, then on again. The device configuration jumper will be set to Master as factory default setting
E-IDE Connector	Use a two-headed 40pin IDE CD Recorder connector and an IDE connector head. Before connecting please switch off the power supply
Power Connector	Connect DC 5V/12V to the power connector

Be careful not to reverse the power connector when attaching it. A reversed connection may cause damage to the equipment (not covered by the warranty)

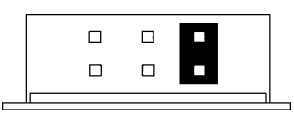
Connecting or disconnecting E-IDE connectors while power is on may result in a short circuit, causing damage to the equipment. When connecting or disconnecting connectors, make sure to turn off the power beforehand.

There is another very important thing to take care of before the installation of the DVD+RW/+R drive is setting the master/slave jumpers. Please examine the panel at the rear of the machine in order to set the master/slave jumpers.

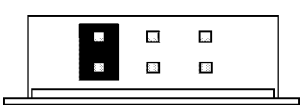




SLAVE

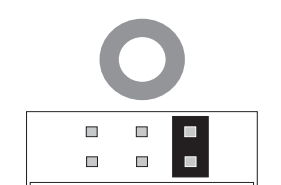


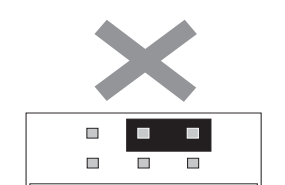
MASTER



USE CSEL

Please do not use USE CSEL setting





Before plugging in the jumpers please make sure you have switched off the power supply of both the DVD+RW/+R and the computer.

Please make sure the jumpers are inserted as displayed in the diagram otherwise you may cause irreparable damage to your DVD+RW/+R device

Note: Installing jumper pins besides the ones for device configuration settings may be the cause of damage or abnormal drive operation.

3.3. Installing the DVD+RW/+R drive

Power off your computer and all peripheral devices. Unplug the computer's power cord from wall outlet or from the power strip.

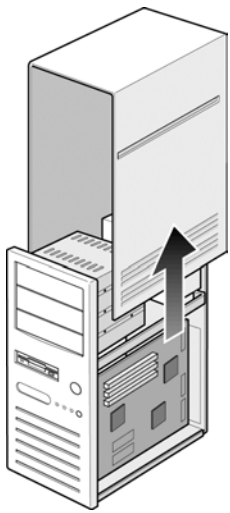
Required Tools

- A medium-size screwdriver
- A long-nosed pliers
- Your computer system or motherboard manual (to locate your computer system's IDE controller).

Installation Procedure

The discharge of static electricity can damage electronic circuitry. You can avoid static discharge by touching a grounded metal object, like your computer case, before and during installation of hardware inside your computer.

1. Remove the housing or casing of your computer. Be careful of any sharp edges, which might be hidden inside your computer.



2. **If there is not any other CD-ROM drive installed in your system.**
   We recommend installing the DVD+RW/+R in the Secondary IDE port. It is unnecessary to adjust any other jumpers on the DVD+RW/+R. Proceed to step 4 for further installation.

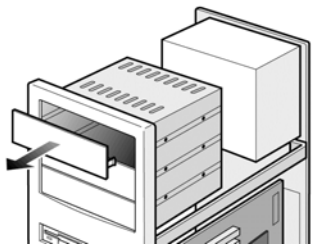
3. **If a CD-ROM drive is already installed in your system.**

   ⚠ ***We recommend that you install the CD-ROM on the Secondary IDE channel as the master device (MA), and the DVD+RW/+R on the Secondary IDE channel as the slave device (SL). Please follow the steps below to fulfill this arrangement.***

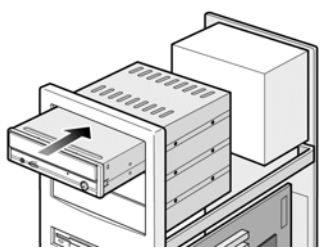
   - First make sure that your Secondary IDE cable has two ports available for two
   - IDE devices. If not, ask your main board vendor or purchase one from computer hardware stores.
   - If the CD-ROM drive was installed in the Primary IDE channel, disconnect it from the Primary IDE cable.
   - Adjust the Device Configuration Jumper of the CD-ROM drive to “Master” (MA) position.

- Adjust the Device Configuration Jumper of the DVD+RW/+R to “Slave” (SL) position.

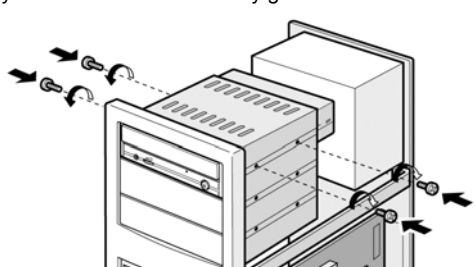
4. First remove the 5.25-inch panel. Further detail of how to remove this can be found in your computer manual.



5. Place the DVD+RW/+R into the slot. Do not force it in any further than need be due to the connector cables.

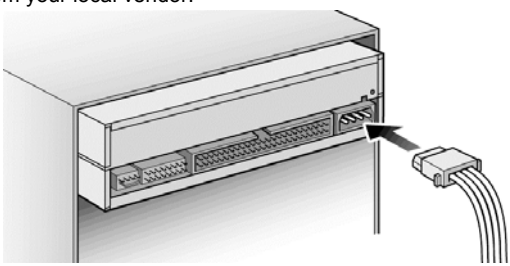


6. Use four provided screws (size: M3x0.5x4mm) to secure the drive into the half-height bay. The screws electronically ground the drive.

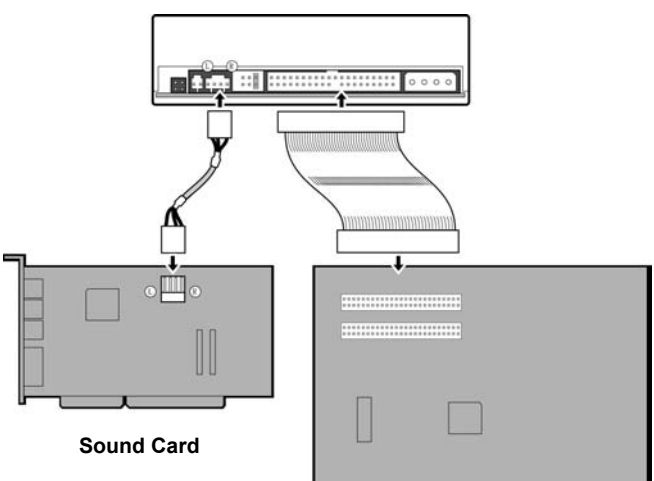


This DVD+RW/+R drive must be horizontally installed and operated.

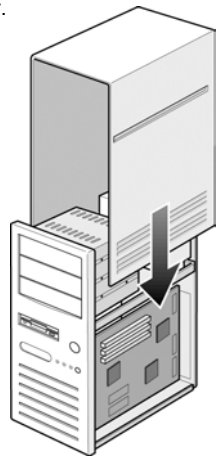
7. Locate your computer's power supply and find an unused power cable connector. If you do not have an available power connector, you'll need to purchase a Y-power cable splitter that expands one power connector into two. You may purchase it from your local vendor.



8. From your main board, find out the 40-pin Secondary IDE interface cable. Then connect them to your DVD+RW/+R. And attach the audio cable if necessary. If you had another CD-ROM drive with audio cable attached, it is not necessary to attach audio cable for your DVD+RW/+R.

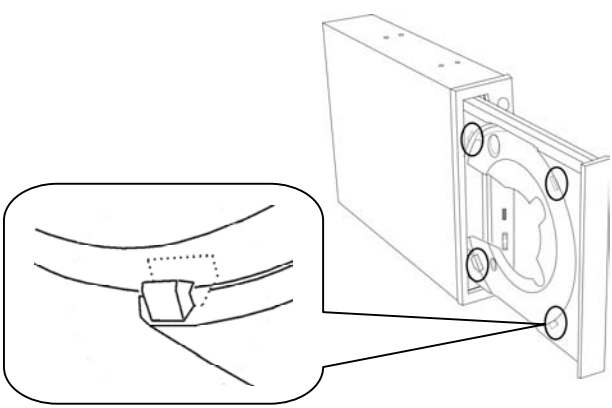


9. Put your computer cover back on. Be careful of any sharp edges, which might be hidden inside your computer.



10. Plug in your computer power cord, and turn on the computer.

⚠ ***If you wish to install this drive vertically, please use the disc holders in the tray to keep the disc secure.***



⚠ ***When installing the DVD+RW/+R drive vertically, please ensure that the eject tray is facing the front. The DVD+RW/+R is best placed at a 90-degree angle, however an allowance of a slant 15-degree either way is possible.***

3.4. Supported CD-R, CD-RW and DVD+RW/+R Discs

Supported Discs

This drive can write to discs that carry the following logos:

	**CD-R discs** This DVD+RW/+R drive can write to these discs at 4x, 8x,12x, 16x, 24x speed. These discs can be played back in a CD-ROM drive or a CD player.
	**CD-RW discs** This DVD+RW/+R drive can write/re-write at 2x or 4x speed on those discs that support 4x speed. These discs can be read/played on a CD-ROM that supports “Multi-Read”.
	**High Speed CD-RW discs** This DVD+RW/+R drive can write/re-write these discs at 4x, 8x, or 10x speed. These discs can be read/played by a CD-RW drive that bears the High Speed CD-RW logo.
	**DVD+RW discs** This DVD+RW/+R drive can writing/re-writing DVD+RW disc at high speed. These discs can be read/played by DVD-ROM drive or DVD player that bears the DVD+RW logo.
	**DVD+R discs** This DVD+RW/+R drive can writing/re-writing DVD+R disc at high speed. These discs can be read/played by DVD-ROM drive or DVD player that bears the DVD+R logo.

The handling of CD-R, CD-RW and DVD+RW/+R Discs

Please read the following regarding the handling of CD-R, CD-RW and DVD+RW/+R discs.

- Do not expose the discs to excessive heat such as in direct sunlight or near a heater. Also avoid keeping them in a humid place.
- Do not touch disc surfaces. When handling a disc, hold it by its edges.
- Remove dust and dirt from disc surfaces. Use air-based dust removers. The surfaces may be scratched if wiped with a dry cloth.
- Do not stick labels on disc surfaces.
- Do not write on disc surfaces except where indicated.
- Do not clean discs with chemicals or detergents.
- Do not bend or drop discs

4. Software Installation

4.1. Before You Start

Please understand that CD & DVD recording are non-interruptible process. Therefore, a stable recording environment is a must. If you have a HDD set up only for CD or DVD recording purpose, the recording process shall be smooth.

However, if an extra HDD is not available, you might prefer carrying out the following steps to optimize your Windows2000/XP/ME/98SE/98(or NT4.0) CD recording arrangement:

- Close all resident programs that include Anti-Virus, Screen Saver, System Agent, Power Management, etc. Turn off Auto Insert Notification. Further, maximizing and minimizing windows are not recommended either. If not, any operation of these applications will intrude the CD/DVD recording process and damage your disk.
- Defragment your HDD before any CD/DVD recording. This is particularly important
- When you write files to CD/DVD+RW from HDD. Defragmentation of HDD reallocates all
- The files so that these relevant files are placed in the nearby clusters. This saves time and risks when CD/DVD burning software is trying to search for the files you want to record on CD or DVD.

4.2. Installing Software

For information on installing procedures and how to use the authoring software, please refer to the manual that came with it. If you want to use another type of authoring software not bundled with this product, please refer to each manual on how to install and operate. Please note that some authoring software or version of authoring software does not support this product.

5. Technical Support

For additional information or help during installation or normal operation of this drive not available in this manual or from our Web site, please contact our dealer where you have purchased this product for support, or you may contact us directly:

AOpen Inc http://www.aopen.com.tw (Traditional Chinese)
http://english.aopen.com.tw (English)

AOpen America Inc. http://www.aopen.com

AOpen Computer B.V. http://www.aopen.nl

Please provide product information, including the model name and serial number, computer system information, and/or a detail description of your problem or question by E-Mail. The AOpen technical support staff will respond as quickly as possible.

5.1. Firmware Upgrade

The DVD+RW/+R uses Flash type firmware, a small piece of software that can be overwritten and updated. To ensure more reliable operations and enhanced performance of the drive, updates to the firmware will be made available. You can download and upgrade the latest version via our Web site regularly at **http://www.aopen.com**

Confirming the firmware version

The Windows 9x users can confirm the firmware version on DVD+RW/+R property with Device Manager.

For Windows NT users, you can verify the version by opening the “Control Panel”, double-clicking on “SCSI Adapter” and clicking the “Device” tab. Right click on the “DVRW2412PRO” and select “Properties”.

For Windows 2000 users, the firmware version will not be displayed. Use your writing software to check it.

5.2. Troubleshooting

Write problems

Symptom	Possible Causes	Solutions
No drive recognition	Bad connection between IDE cable and your DVD+RW/+R 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 DVD+RW/+R is not conflict with the other IDE device connected to the same IDE port.
	Using other writing software which not supports your DVD+RW/+R drive.	Use the writing software provided with this DVD+RW/+R drive. When using other software, ensure your DVD+RW/+R drive is supported by contacting the software supplier.
Cannot write	Using other writing software which not supports your DVD+RW/+R drive.	Use the writing software provided with this DVD+RW/+R drive. When using other software, ensure your DVD+RW/+R drive is supported by contacting the software supplier.
	Disc inserted upside down.	Reinsert the disc with label side up.
	No power.	Check if the power cord is securely connected to the connector.
	IDE cable isn't connected properly	Ensure the cable of IDE connectors are not damaged, bent or dented. Check especially the pins.
	Install more than one CD/DVD writing software simultaneously.	Remove other writing software. Just keep one software on your hard disk.
Cannot add writing on DVD+RW	Wrote with another writing software	If different writing software is used comparing to the previous writing, errors may occur. Use always the same writing software.
	Short of DVD+RW capacity	Capacity of CD-R/RW media is limited to 650MB (74 min-type) and DVD+RW/+R media limited to 4.7GB including lead-in, lead-out and TOC data. Use a new CD-R/RW or DVD+RW/+R media if the capacity is insufficient for the additional data.
Cannot write at highest speed	CD-R/RW media not compatible with the highest speed.	Use the highest speed compatible discs or writ with lower speed.
	Defective CD-R/RW or DVD+RW/+R media.	CD-R/RW or DVD+RW/+R media may be dirty, scratched or damaged. Rewrite on another CD-R/RW or DVD+RW/+R media.
	Using other writing software not bundled with your DVD+RW.	Use the writing software provided with this DVD+RW drive. When using other software, ensure your DVD+RW drive is supported by contacting the software supplier.
	Source Drive not support highest speed on the fly.	Copy all files to harddisk, then write from harddisk to CD-R or DVD+RW. Otherwise, pls slow down writing speed.
	Source Disc is bad-quality	Make image files then burn image file onto the CD-R/RW or DVD+RW disc.
	DMA function disable	Ensure to enable DMA function on both source and target drives.

Read problems

Symptom	Possible Causes	Solutions
No drive recognition	IDE cable and the DVD+RW/+R drive not connected properly.	Ensure both connectors of IDE cable is properly connected to the IDE ports on the main board and DVD+RW/+R.
	Conflicts with other IDE devices.	Ensure the Master/Slave device setting of DVD+RW/+R is not conflict with the other IDE device connected to the same IDE port.
	Power is not switched on.	Check if the LED of your DVD+RW/+R drive is lit. If not, there is no power.
No operation	No power	Check if the power cord is connected securely to the connector.
	IDE cable isn't connected properly.	Ensure the IDE cable and connectors are not damaged, bent or dented. Check especially the pins.
Cannot read photo CD discs	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.
	Need special application software	Check if install "Kodak Photo CD Access Plus Software".
Cannot read CD-I discs	Need special application software	Check if install application software such as "Cyberlink Powerplayer"
Read error occurs	Defective CD-ROM disc	Deep scratches, fingerprints or other contaminates on the discs surface can disable the drive from reading data. Always keep it clean.
	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.
	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.
Cannot eject tray	Eject locked by software.	When you are working under Windows 9x/NT 4.0, check if locked on the DVD+RW/+R properly.
	CD/DVD 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 multisession 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 or DVD+RW/+R media.
Cannot read the former session of the CD-R/RW or DVD+RW/+R disc which has been written at least twice	"Load Contents" or "Import Session" was NOT clicked on the software.	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.

5.3. How to Contact Us

Dear Customer,

Thanks for choosing AOpen products. To provide the best and fastest service to our customer is our first priority. However, we receive numerous emails and phone-calls worldwide everyday, it is very hard for us to serve everyone on time. We recommend you follow the procedures below and seek help before contact us. With your help, we can then continue to provide the best quality service to more customers.

Thanks very much for your understanding!

AOpen Technical Supporting Team

Online Manual: Please check the manual carefully and make sure the jumper settings and installation procedure are correct.
http://www.aopen.com/tech/download/manual/default.htm

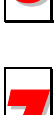
Test Report: We recommend to choose board/card/device from the compatibility test reports for assembling your PC.
http://www.aopen.com/tech/report/default.htm

FAQ: The latest FAQ (Frequently Asked Questions) may contain a solution to your problem.
http://www.aopen.com/tech/faq/default.htm

Download Software: Check out this table to get the latest updated BIOS/utility and drivers.
http://www.aopen.com/tech/download/default.htm

News Group: Your problem probably had been answered by our support engineer or professional users on the news group.
http://www.aopen.com/tech/newsgrp/default.htm

Contact Distributors/Resellers: We sell our products through resellers and integrators. They should know your system configuration very well and should be able to solve your problem more efficiently than us. After all, their attitude of service is an important reference for you if next time you want to buy something else from them.



Contact Us: Please prepare detail system configuration and error symptom before contacting us. The **part number**, **serial number** and **Firmware version** are also very helpful.

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AOpen Inc.
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E-mail: Send us email by going through the contact form below.

English ***http://www.aopen.com/tech/contact/techusa.htm***

Japanese ***http://www.aopen.co.jp/tech/contact/techjp.htm***

Chinese ***http://www.aopen.com.tw/tech/contact/techtw.htm***

German ***http://www.aopencom.de/tech/contact/techde.htm***

Simplified Chinese ***http://www.aopen.com.cn/tech/contact/techcn.htm***

Appendix A. Glossary

CD-DA
Compact Disc - Digital Audio. The typical music CD is written with this CD format. At this time, up to 74 minutes of music can be written on a CD. The corresponding standard is the Red Book.

CD-I
Compact Disc - Interactive. This format allows the storage of different types of data such as images, music or video on a CD. The process is defined in the Green Book.

CD-R

Compact Disc - Recordable. A technology for CD-R (recordable) media. Also refer to CD-WO, Compact Disc - Write Once, limited to just one writing.

CD-ROM
Compact Disc - Read Only Memory. This is described in the Yellow Book. Differing types of data that can be read by a computer such as programs, text, image data or sound may be stored with this CD format.

CD-ROM - Mode 1 and Mode 2
A supplement to the CD-ROM format which provides an additional error recognition and correction function. Mode 1 is especially used for computer data and employs a code for error correction. Mode 2 is used with CD-ROM/ XA and CD-I with audio data and contains an error recognition code only.

CD-ROM/ XA
CD-ROM/ Extended Architecture. This CD format makes it possible to store computer data and audio or video data on one track. The different types of data are linked to each other (Interleaving) so that synchronization problems can be reduced.

CD-RW

Compact Disc - ReWritable. A technology for CD-RW (rewritable) media. It is not limited to just one writing, but may be erased and re-written as often as desired.

CD-WO
CD - Write Once. As the name implies, it is a CD that may only be written on once. Also refer to CD-R.

DVD+RW

Compact Disc – ReWritable. A technology for DVD+RW (rewritable) media. It is not limited to just one writing, but may be erased and re-written as often as desired.

DVD+R

A technology for DVD+R (limited to just one writing.)

Disc At Once
Disc At Once is a method for recording of data onto a CD. With this method, the entire CD is written in a single process. The CD-recorder first writes a Lead-In, then the data block, and finally a Lead-Out. In contrast to Track At Once, linking blocks are not used between the individual tracks with Disc At Once.

Enhanced Music CD, CD + and CD Extra
An expansion of Audio or Mixed-Mode CD consists of two sessions. The first session corresponds to CD-DA, while the second session consists of computer data. The process is specified in the Blue Book.

Finalization
Finalization is the permanent closing of the writing procedure on a CD. After that, it cannot be written to, regardless of whether it was produced as a single-session or a multi-session CD.

Green Book
A book of CD Interactive (CD-I) standards published by Philips and Sony in 1986

High Sierra
The forerunner of today's ISO Standard 9660. It was published in 1986. With the passage of time it has lost its significance.

Hybrid Type CD
A CD-ROM disc storing "two different platforms of softwares" for Windows and Macintosh etc.

Image
The term "image" describes all edited data that will later be located on a CD. The creation of an image file is known as premastering.

ISO 9660
ISO Standard 9660 describes the construction of a CD-ROM, so that it may be read and processed by different types of operating systems.

Joliet
This supplement to the standards comes from Microsoft and is supported by Windows 95 and Windows NT. The CDs that are created under this standard are in conformity with ISO 9660, which allows long file names based on Unicode in additional directory structures.

Mixed Mode-CD
Music and computer data are stored on one CD with this type of CD. The computer data are generally located on track 1 and audio data are located in the ensuing tracks.

Multi-Session-CD
A CD which is written in several sequential sessions is known as a multi-session CD.

On-The-Fly
A process for burning data onto a CD-R. There are two different methods of doing this. With the classical and older method, all of the data which are to be recorded onto the CD are first stored in a buffer in a large file known as an image file. From there, they are copied or burned onto the CD-R. In contrast to this, the method known as On-The-Fly transfers the data directly from their original memory locations on a hard drive onto the CD-R.

Orange Book
The Orange Book is a physical format of recordable CD announced in 1989 by Philips and Sony. The Orange Book describes CD-MO in part-I and CD-R in part-II. Later on part-II was updated. In 1994, version-II was announced for the CD-ROM and its double speed type. In 1996, the standards for phase change optical disc, rewritable CD (CD-RW) was added as part-III.

Photo-CD
A CD format and system devised by Eastman Kodak to record digitized photograph data.

Rainbow Books
The collection of standards which define the different types of CDs. Through these standards, it has been achieved that CDs can be read and processed by as many devices and operating systems of the different manufacturers as possible.

Red Book
A book setting the standards for the Compact Disc physical format and audio recording methods, published by Philips and Sony in 1981.

Session
An inter-related writing procedure is defined as a session. A session consists of the Lead In area, the data area, and the Lead Out area. A CD can be written with several sessions. This is then called a multi-session CD, in contrast to a single-session CD which only contains one session. A silver CD generally consists of one session.

TOC
Contents of the Lead-in, this contains the addresses of all the tracks on the CD.

Track
In an Audio-CD, one track corresponds to one piece of music. With a CD-ROM, one track contains computer data and it may have any number of files and folders.

UDF
UDF is short for Universal Disc Format, another file layout standard for CDROM. The UDF format can use in CD-R, CD-RW, and DVD by Packet writing method, which would not cause "Buffer Under-Run" and can be compatible with ISO9660.The advantage of UDF is provided similar function like hard disk.

Video CD
A CD-ROM storing MPEG-1-compressed moving pictures, still pictures, audio sounds etc.

Video DVD
A DVD-ROM storing MPEG-2-compressed moving pictures, still pictures, audio sounds etc.

Yellow Book
A book of CD-ROM standards published by Philips and Sony in 1985.

Appendix B. Frequently Asked Question (FAQ)

The following FAQ's are the most common problems you may find during installation or regular use. Please review these FAQ's to have your problem solved. In case you do not find any items that answer your problem, please contact your dealer or technical support.

Q: Computer won't boot up after installation.

Please proceed the following procedures to get your computer back to work:

- Turn off and unplug your computer first. Check each connector along both IDE cables. (Bent pins, orientations or bad contacts.)
- Check if the power cable attached correctly to each drive.
- If an IDE cable is connected with DVD+RW/+R and other device, check the jumper settings of both devices and make sure the "MA" (master) and "SL" (slave) settings are different from each other.

Q: The DVD+RW/+R doesn't show up in My Computer or Explorer.

The following steps will assist you to get your drive to work as a DVD-ROM:

- If you cannot find DVD+RW/+R in Explorer, restart your computer, or shut it down and then turn it on again.
- Is the DVD+RW/+R receiving power properly? You can test it by pressing eject button to see if the tray opens and closes.
- Is the IDE cable connected properly? Be careful to turn off and unplug your computer system before checking this item. Check the connection by your opening computer system to see if the IDE connector well inserted and the colored stripe on the side of the IDE cable lines up with PIN-1 of each connector.
- Select "enable both IDE channels" to enable the IDE channels. Then reboot your PC.

Q: The DVD+RW/+R has problem in reading CD/DVD disc, or Error message when double-clicking on the DVD+RW/+R icon.

There are several ways to solve this problem as follows:

- The CD/DVD disc in the tray may be loaded upside-down, or a little off-center. Try re-loading the CD/DVD disc with its label side up.
- After loading a CD/DVD disc, it will take a moment to let the DVD+RW/+R read the disc information. When the indicator on the front panel stops flashing and stays green, it is ready for access.
- If the disc you just loaded is a blank disc, try it later after copying some information to the disk.

Q: Unable to see a second session reading from a CD-ROM/DVD-ROM drive.

- Eject the CD/DVD and re-load it.
- Refresh the screen. Select the My Computer icon in Windows Explorer and press F5.
- Make sure if your CD-ROM/DVD-ROM drive reads CD-RW/DVD+RW/+R discs. CD-RW/DVD+RW/+R discs can only be used in CD-R/RW, DVD+RW or newer MultiRead CD-ROM/DVD-ROM.
- For Windows 3.x users: Windows 3.x cannot read multi-session CD disc that is created by package writing software. If some other programs create the CD disc, please verify you are using version 2.23 of the MSCDEX.EXE file. First, restart your PC and when you see "Starting MS-DOS…" appear on your monitor, press F8. Each line in your CONFIG.SYS and AUTOEXEC.BAT files will load one at a time. Press "Y" until you see a line containing "MSCDEX.EXE", then press "Y" and you will see the version number displayed on monitor. The number shall be 2.23 or greater. In case you cannot find this file, you can download it from Microsoft's FTP site: ftp://ftp.microsoft.com/Softlib/MSFILES/MSCD223.EXE. This file is a self-extracted ZIP file, please run it to retrieve MSCDEX.EXE file.
- See if the CD-ROM, CD-R/RW, DVD-ROM or other DVD+RW/+R drives can read the CD/ DVD+RW/+R discs properly. If so, then the problem is probably with the CD-ROM/DVD-ROM drive. Contact the manufacturer of the drive for updated drivers or patch files.

Q: Applications cannot locate the DVD in DVD+RW/+R drive.

- Some programs only locate the first logical drive letter assigned to a DVD-ROM or a DVD+RW/+R drive. For example, if your DVD-ROM drive is assigned drive D: and DVD+RW/+R is assigned drive E:, the program locates drive D: only and will not locate drive E:. Thus you need to reassign drive letters to both your DVD-ROM and DVD+RW/+R drives in case you need to run the program in DVD+RW/+R.
- Windows ME/98: right-click My Computer icon. Click Properties item, open Device Manager and double-click CD-ROM drive, then click Setting tab. Under Reserved drive letters, select the drive letter after the existing letter (for both start and end drive letter) and click OK. Then double-click DVD+RW/+R icon, then click Setting tab. Under Reserved drive letters, select the drive letter before current one and click OK.
- Windows NT: click on Start | Programs | Administrative Tolls (common). Choose Disk Administrator. Right-click on the drive letter you would like to change. Select Assign Drive Letter and change the drive letter accordingly.

The above are only GENERAL rules that do not necessarily apply to any combination of DVD+RW/+R drives, HDD and motherboards. A few trials on different configurations before recording are recommended. Also, try out different DVD+RW/+R media before you proceed to make volumes duplication as you may figure out which brand of CD-R/DVD+RW/+R media originates smoother recording and easier access. As long as you find the best CD/DVD recording way, stick to it.

Appendix C. Specification

Interface		E-IDE/ ATAPI Internal
Supported Media for writing		DVD+RW/+R, CD-R, High Speed CD-RW
Writing speed	DVD+RW/+R CD-R CD-RW	2.4x 2x, 4x, 8x, 12x 2x, 4x, 10x
Reading speed	DVD-ROM CD-ROM	Max. 8x Max. 32x
Write/Read Norma Speed	DVD+RW CD	3.32MB 150KB/sec, Mode 1 & Mode 2 Form 1 170KB/sec, Mode 2 Form 2
Writing mode	DVD+RW/+R CD-R/RW	Random Access Write, Sequential Write Disc At Once, Session At once, Track At Once, Multi-Session, Packet write
Writing format	DVD+RW/+R CD	DVD-ROM, DVD-Video, Random Access Write CD-DA, CD-ROM, CD-ROM XA,CD Extra, CD-I, Mixed-ModeCD, VideoCD, PhotoCD, CD TEXT, Bootable CD
Recording Capacity	DVD+RW/+R disc CD-R disc CD-RW disc	4.7 GB 700/650 MB (Type 80/74) 700/650 MB (Type 80/74)
Error Rate		10^{-12} bits or less
Average access time	DVD CD	140 msec. (8x) 120 msec. (32x)
Buffer memory		2MB
Data transfer speed		Max. 33MB/sec.（Ultra DMA Mode2）
Audio Output Level	Analog audio output Digital audio output Headphone output	0.70V ± 0.1Vrms TTL level 0.70V ± 0.1Vrms
Power Consumption		Max. 16W
Aoustic Noise	Idle Operating Non-operating	45 dB or less 55 dB or less 49 dB or less
5V Power Supply	Voltage Ripple Current	DC 5V ± 5% 50mVp-p or less 2.0A (Typ.), 2.5A/15sec. or less (peak)
12V Power Supply	Voltage Ripple Current	DC 12V ± 10% 100mVp-p or less 0.7A (Typ.), 1.5A/3sec. or less (peak)
Installation		Horizontal/Vertical
Weight		Less than 1.2 Kg
Dimensions（W x D x H ）		145.6×196.4×41.6mm（including the front panel）