

CD-Recordable/Rewritable

CDD3610



User's manual

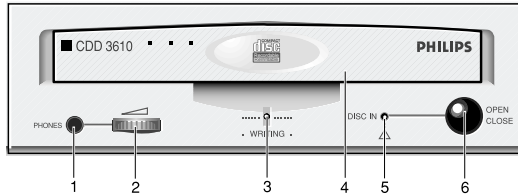


PHILIPS

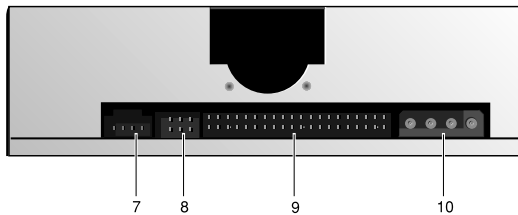
CDD3610 CD - Compact Disc Recordable/Rewritable

FIG.1

Front view



Rear view



FRONT VIEW

1. Headphone plug
2. Headphone volume control
3. Write indicator
4. Disc Tray
5. Disc In/Active/Error indicator
6. Open/Close button

VORDERANSICHT

1. Anschlußbuchse Kopfhörer
2. Lautstärke Kopfhörer
3. Schreibanzeige
4. Schublade
5. Diskette ein/Activ/Fehler anzeige
6. Open/Close Taste

PANNEAU AVANT

1. Prise pour casque
2. Commande du volume du casque
3. Témoin lumineux d'enregistrement
4. Tiroir à disque
5. Témoin disque/Activé/erreur
6. Touche ouvrir/fermer

REAR VIEW

7. Audio Line Out connector
8. Jumperblock
9. IDE connector
10. Host DC power connector

RÜCKANSICHT

7. Tonanschluß Aus-Connector
8. Jumperblock
9. IDE Connector
10. Host Gleichstromnetzanschluß

PANNEAU ARRIERE

7. Connecteur de sortie de ligne audio
8. Cavaliers
9. Connecteur IDE
10. Connecteurs au bloc d'alimentation C.C. hôte

PARTE ANTERIORE

1. Presa cuffie
2. Controllo volume cuffie
3. Indicatore di scrittura
4. Cassetto del disco
5. Indicatore disco inserito/Attivo/Errore
6. Tasto Apertura/Chiusura

VISTA FRONTAL

1. Clavija de los auriculares
2. Control del volumen de los auriculares C.D.
3. Indicador escritura
4. Bandeja del Disco
5. Indicador de Disco introducido/Activo/Error
6. Bóton de Apertura/Cierre

VOORZIJDE

1. Hoofdfone aansluiting
2. Hoofdfone volumeregelaar
3. Schrijfindicator
4. Disc-lade
5. Disc aanwezig/Actief/foutindicator
6. Openen/sluiten-toets

PARTE POSTERIORE

7. Connettore Line Out Audio
8. Blocco Jumpers
9. Connettore IDE
10. Connettore alimentazione DC

VISTA POSTERIOR

7. Conector de salida de Línea de Audio
8. Bloque de conectores
9. Conector IDE
10. Conector de alimentación

ACHTERZIJDE

7. Audio-connector lijnuitgang
8. Jumper-block
9. IDE connector
10. Voedingsconnector host computer

WARNING

This device complies with Part 15 of the FCC (U.S.A.) 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.

NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can be 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 this equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

IMPORTANT

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

FOR EUROPE



“The CDD3610 is in conformity with the EMC directive and low-voltage directive.”

LASER SAFETY

This unit employs a laser. Do not remove the cover or attempt to service this device when connected due to the possibility of eye damage.

LASER-SICHERHEIT

In das Gerät ist ein Laser eingebaut. Nehmen Sie die Abdeckung nicht ab und versuchen Sie nicht, das Gerät zu reparieren, solange es angeschlossen ist. Es besteht die Gefahr einer Augenverletzung.

CAUTION

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS LASER RADIATION EXPOSURE.

WARNUNG

DIE VORNAHME VON REGELUNGEN ODER EINSTELLUNGEN ODER DIE DURCHFÜHRUNG VON VERFAHREN, DIE NICHT IN DIESEM DOKUMENT (DIESER BESCHREIBUNG; IM NACHSTEHENDEN TEXT) ANGEGEBEN SIND, KANN EINE GEFÄHRLICHE EINWIRKUNG VON LASERSTRAHLUNG ZUR FOLGE HABEN.

**CLASS 1
LASER PRODUCT**

**LUOKAN I
LASERLAITE**

**KLASS 1
LASERAPPARAT**

**KLASSE 1
LASER-PRODUKT**

CAUTION	INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
VARO!	AVATTAESSA OLET ALTIINA NÄKYMÄTTÖMÄLLE LASER SÄTTEILYLLE ÄLÄ KATSO SÄTEESEN
VARNING	OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN
ADVERSEL	USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UNSAETTELSE FOR STRÅLING
DANGER	INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM
VORSICHT	INSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETSEN

LASER

Type	Semiconductor laser GaAlAs
Wave length	775~795 nm (at 25° C)
Output Power	2,5 mW (Read) 35 mW (Write)
Beam divergence	60 degree.

Features of the CDD3610 CD-Recordable/ReWritable drive:

- Multi-function device (CD-ROM reader, CD-Recorder and CD-ReWritable drive)
- Supports Incremental Packet Writing for data storage applications and "drag & drop" File System support through the CD-UDF standard (endorsed by Optical Storage Technology Association or OSTA)
- Supports standardised Multi Media Commandset (MMC) as standardised by the American National Standards Institute (ANSI)
- Plug & Play read compatibility under Windows 95 and Windows NT
- Interfaces directly to low cost standardised (Enhanced) IDE connector on PC motherboard

Unpacking

If the CDD3610 package shows evidence of rough handling or damage and the drive does not function properly on initial startup: return the drive and damaged package to your supplier and request a replacement.

Lift out the CDD3610 and remove the packing pieces.
Check that the package contains following items :

- User manual
- Mounting screws + jumpers

An IDE flatcable and audio cable can be obtained from your supplier.



INSTALLATION

Precautions

This CD-Recordable/Rewritable drive, like all electronic equipment, is static sensitive.

- Please take the proper precautions when handling the drive, for example by touching the PC - chassis before touching the drive.
- Avoid touching the IDE connector pins as well as the audio-connector pins and the jumper pins.
- Keep the drive in its conductive wrapping until you are ready to install the drive in your computer.

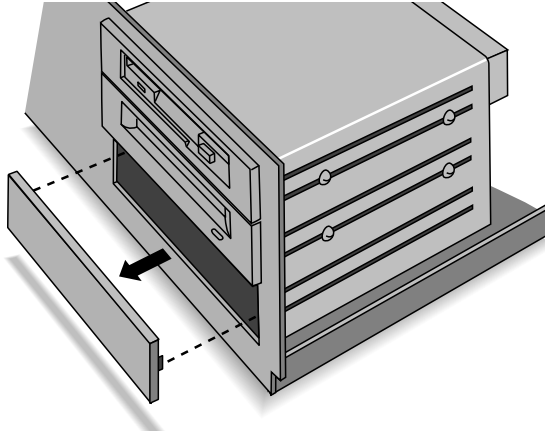
Safety Precautions

- Europe: This drive shall be installed only with an EN60950 (IEC950) approved Power supply.
- USA/Canada: This drive is for use only with IBM compatible UL listed Personal Computers or Macintosh UL listed workstations weighing less than 18 kg.

Copyright Statement

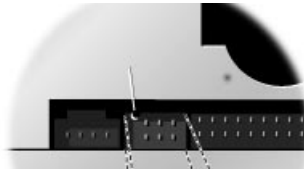
It is a criminal offence, under applicable copyright laws, to make unauthorised copies of copyright-protected material, including computer programs, films, broadcasts and sound recordings. This equipment should not be used for such purposes.

- 3 In order to mount the drive inside your PC (or other type of computer), locate a free horizontal 5.25" bay and follow the instructions, as provided with your computer systems, for installing the drive.



- 4 You have several possibilities to install your IDE data cable depending on your existing configuration:

- A)** Hard-Disc connected as Master to Primary IDE Port,
 CD-ROM connected as Master to Secondary IDE Port:
 Connect CDD3610 as Slave to Secondary IDE Port.

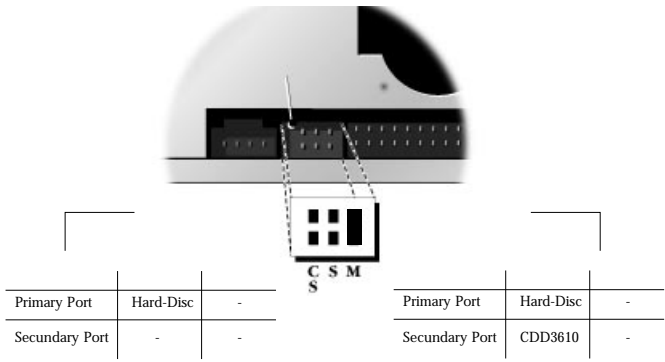


Primary Port	Hard-Disc	-
Secondary Port	CD-ROM	-

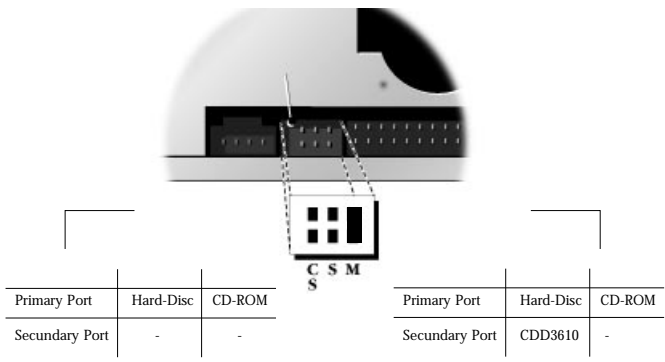
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Primary Port	Hard-Disc	-
Secondary Port	CD-ROM	CDD3610

B) Single Hard-disc connected as master to Primary IDE Port:
Connect CDD3610 as Master to Secondary Port.



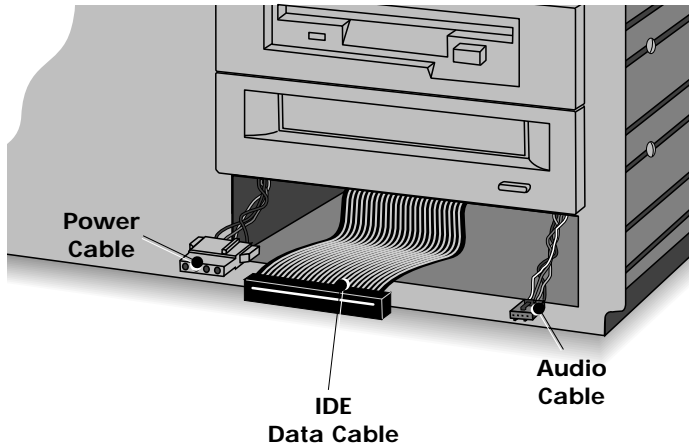
C) Hard-disc connected as Master to Primary IDE Port,
CD-ROM connected as Slave to Primary IDE Port:
Connect CDD3610 as Master to Secondary IDE Port.



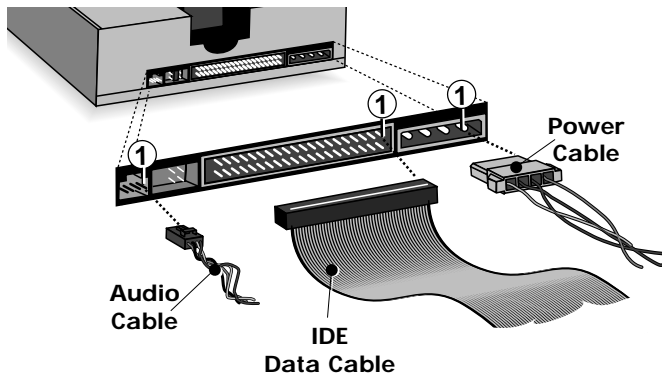
NOTE: INSTALLATION A IS PREFERRED FOR SYSTEMS WITH AN IDE HARD-DISC AND CD-ROM.

NOTE: INSTALLATION B IS PREFERRED FOR SYSTEMS WITH ONLY AN IDE HARD-DISC.

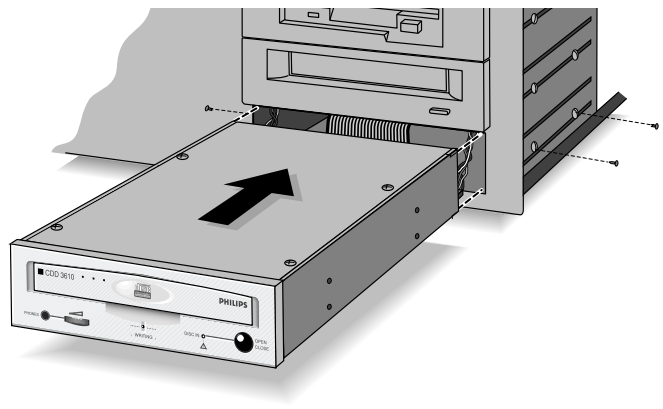
- 5 Locate the free end of the IDE data cable and thread it out through the open drive bay. Do the same with the power cable and the (optional) audio cable.



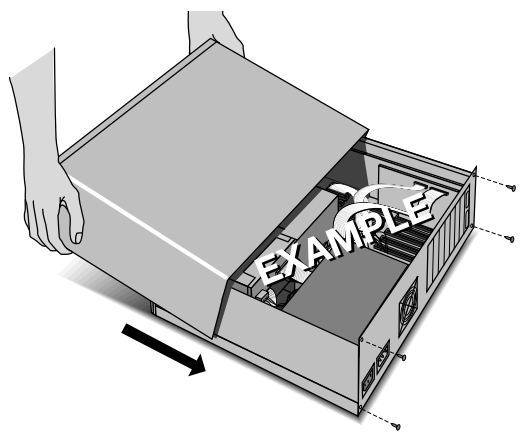
- 6 Connect your (optional) audio cable, IDE data cable and the power cable into the back of the CDD3610. Make sure you correctly align pin 1 of the cable to pin 1 of the connectors.



- 7 Insert the CDD3610 into the drive bay. Using all the screws included in the bag to secure the CDD3610 into the bay.



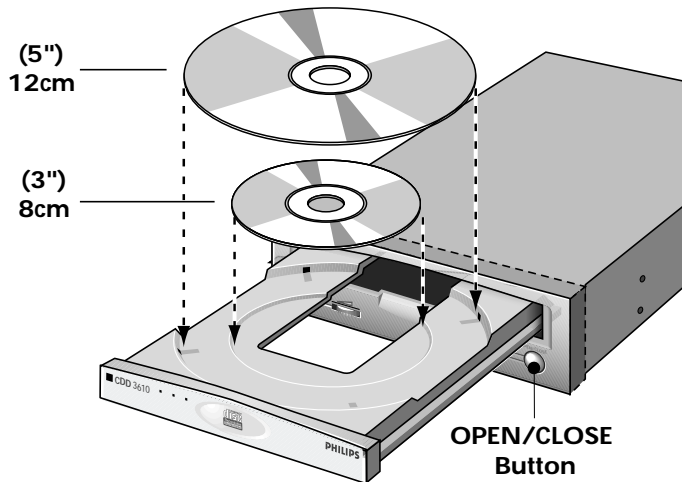
- 8 Replace the cover. Connect the mains plug of your configuration. When you have successfully installed the drive and established all connections, it is now time to switch on the PC. You are ready to run the selftest (See appendix) and then install the software.



OPERATING/TESTING YOUR CD-RECORDABLE/REWRITABLE SYSTEM

Loading and unloading a disc

- 1 To open the tray: Press the Open/Close button.
- 2 Load a disc, with the label facing upwards. The tray accommodates discs with 8 cm diameter (CD-Single) or the more usual 12 cm discs.



- 3 To close the tray, either push gently at the front of the tray or press the Open/Close button.

NOTE: FOR OPTIMAL RESULTS, USE PHILIPS CD-R OR CD-RW MEDIA.

NOTE: DON'T USE GENERAL PURPOSE COMMERCIAL HEAD CLEANING DISCS.



NOTE: Do NOT SWITCH OFF THE COMPUTER AND/OR THE DRIVE DURING THE RECORDING PROCESS, SINCE THIS MIGHT RESULT IN AN UNREADABLE DISC. PLEASE MAKE SURE THAT THE COMPUTER HAS FINISHED ITS RECORDING PROCESS AND THAT THE WRITE INDICATOR ON THE FRONT OF THE DRIVE IS OFF.

Operating the CD-Recordable/Rewritable on the computer

Specific Application Software running on the computer platform in use, designed to work with the Philips CDD3610, must be used in order to be able to operate the CDD3610 correctly.

Software installation

The installation and operation of the necessary software is dependent off the computer configuration in which the CDD3610 is to be used, e.g. PC's, Windows 3.11, Windows 95, Windows NT, UNIX or other Operating Systems. Contact your supplier for the full list of supported host configurations and available software packages.

All trademarks acknowledged.

Command description

This drive supports commands based on the industry standard MMC (MultiMedia Command set). An extensive description of the total command set is available on request.

Audio performance

- Audio specification for line out:

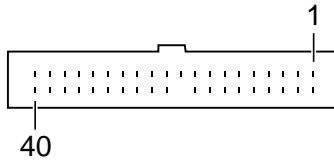
	On pressed CD	On recordable CD
Output Voltage	1 V rms	1 V rms
Unbalance	max 0.25 dB	max 0.25 dB
Output Impedance	470 Ohm	470 Ohm
Amplitude Linearity	1.5 dB (20 Hz - 20 kHz)	2.5 dB (20 Hz - 16 kHz)
S/N-ratio	81 dB (84 dB A-wtg)	80 dB (82 dB A-wtg)
Total Harmonic Distortion + Noise	65 dB (1kHz)	55 dB (1kHz)
Outband attenuation	min. 50 dB above 25 kHz	min. 50 dB above 25 kHz
Channel separation	min. 70 dB (20 kHz)	min. 65 dB (16 kHz)
Muting level during random access	min. 70 dB (BW = 20 kHz)	min. 70 dB (BW = 20 kHz)

- Audio specification for headphone:

	On pressed CD	On recordable CD
Output Voltage (max volume)	3.1 V rms	3.1 V rms
Unbalance	max 0.25 dB	max 0.25 dB
Output Impedance	120 Ohm	120 Ohm
Amplitude Linearity	1.5 dB (20 Hz - 20 kHz)	2.5 dB (20 Hz - 16 kHz)
S/N-ratio	81 dB (84 dB A-wtg)	80 dB (82 dB A-wtg)
Total Harmonic Distortion + Noise	60 dB	45 dB
Outband attenuation	min. 50 dB above 25 kHz	min. 50 dB above 25 kHz
Channel separation	min. 67 dB (20 kHz)	min. 65 dB (16 kHz)
Muting level during random access	min. 60 dB (BW = 20 kHz)	min. 60 dB (BW = 20 kHz)

NOTE: THE SOMEWHAT REDUCED AUDIO QUALITY WHEN PLAYING BACK AUDIO TRACKS ON CD-R DISCS HAS NO RELATION TO THE DIGITAL QUALITY OF THE AUDIO TRACKS AS THEY HAVE BEEN RECORDED ONTO THE CD-R DISC.

Interface Pin Table



SIGNAL	PIN NUMBER	SIGNAL	PIN NUMBER
RESET	01	DMA REQUEST	21
GROUND	02	GROUND	22
-DB(7)	03	I/O WRITE	23
-DB(8)	04	GROUND	24
-DB(6)	05	I/O READ	25
-DB(9)	06	GROUND	26
-DB(5)	07	I/O READY	27
-DB(10)	08	SPSYNC:CSEL	28
-DB(4)	09	DMACK-	29
-DB(11)	10	GROUND	30
-DB(3)	11	INTRQ	31
-DB(12)	12	16 BIT I/O	32
-DB(2)	13	DA1	33
-DB(13)	14	PDIAG-	34
-DB(1)	15	DA0	35
-DB(14)	16	DA2	36
-DB(0)	17	CHIP SELECT 0	37
-DB(15)	18	CHIP SELECT 1	38
GROUND	19	DASP-	39
Removed	20	GROUND	40

Auto selftest

- The auto selftest will execute a number of diagnostic tests and will be activated by pushing and holding Open/Close button for one complete Open/Close cycle of the tray.
- The auto selftest can also be executed by holding the Open/Close button for about 4 seconds during power-up.
- The disc-in LED and the write-LED will be tested before the actual selftest:
 - The disc-in LED will flash three times: The first time RED, the second time GREEN and the last time ORANGE.
 - The write-LED will flash ORANGE.This is repeated once.
- During execution of a particular test 0, the right LED is ORANGE. After execution of this test, the right LED will flash a number of times.
If this part of the test failed, then the LED will flash RED a number of times. The number of flashes, corresponds to the sequence number of the test.
- In case of a failing selftest, it may helpful to report the number of the failing test to your supplier.

Example : Execution of test number 4

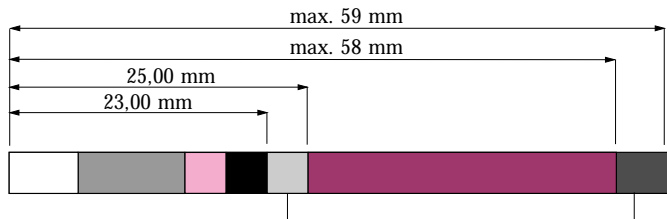
- disc-in LED is ORANGE
 - Test 4 is being executed
- disc-in LED flashes 4 times GREEN
 - Test 4 is executed successfully

OR

- disc-in LED flashes 4 times RED
 - Test 4 failed
-
- After completion of the whole selftest, a final indication of the testresults will be given: The LED will flash GREEN-ORANGE for about 3 seconds if the test is successful. Otherwise, the LED will be RED until a new command has to be executed.

A CROSS-SECTION THROUGH A FULLY RECORDED CD-R DISC.

The fully recorded CD-R disc has a program of 74 minutes playing time, a lead-in area with table of contents and a lead-out area.



- The areas specific to the CD recorder, the PCA and PMA, are still present but are simply not used by conventional CD players.
- When the lead-in area is provided with the table of contents, the CD recorder uses the information stored here and not the data from the PMA area.
- Identification of the end of the disc is stored in the Lead-out. The CD player stops playback of a disc when reaching this area.

Glossary of terms CD-RW

THE BEST WAY TO CREATE YOUR OWN CDs - WITH RE-USABLE CD-RW.

- CD-ReWritable (CD-RW) gives you the opportunity to create your own CDs, in the best and most cost-effective way. CD-RW is, in fact, the logical extension of the promise already made by Philips CD-Recordable (CD-R). Together, they give you the opportunity to run the media that best suits the job in hand.
- CD-RW supports the recording of small packages of data, using incremental packet writing in the universal (UDF) file format. As with floppy discs, you have the option of writing a disc all at once, or building it up bit by bit - and re-using the disc later for other data.
- CD-RW media can be rewritten hundreds, or even thousands of times. This means that the overall running costs, for hardware and software together, can be very economical indeed.
- CD-RW will greatly extend your personal short-term storage capacity, providing space for large-volume files like Internet downloads, backups, and hard disc dumps. It is also excellent for low-quantity multimedia applications, from one-off disc testing to small-scale distribution

MULTIREAD: MAKING CD-RW MEDIA COMPATIBLE WITH CD-ROM AND DVD-ROM.

- Compatibility and interchangeability have always been the cornerstones of CD. To ensure that CD-RW is no exception, Philips and Hewlett-Packard worked together to specify MultiRead.
- CD-RW media reflects less laser light than the other CD media. To play all CD media, drives must be able to adapt to these different reflectivities.

WHAT IS THE ORANGE BOOK?

- The Orange Book is a document that describes the specification for CD-Write Once (CD-Recordable) technology developed by Philips and Sony.
- It defines both the physical structure and dimensions of a CD-R disc as well as the use of certain portions of the recording surface:
 - to record information (the Program area),
 - to calibrate the recorder laser power (Power Calibration area or PCA),
 - to record track information for all sessions (the Program Memory area or PMA),
 - to record the Lead-in Lead-out areas that precede and follow, respectively, the Program area.
- There are several “parts” to the Orange Book. Part II refers to CD-Recordable.

WHAT DOES ORANGE BOOK CERTIFIED MEDIA MEAN AND WHY?

- The Orange Book, Part II is the primary specification for CD-R media. Accordingly, all CD-R media should meet the Orange Book criteria for recordability and playback.
- Philips and Sony, the originators of the Orange Book, provide Orange Book certification of CD-R media.

WHAT IS MULTISESSION CD?

The principal purpose of multiple sessions is to allow additional data to be appended to a previously recorded disc.

NOTE: SOME OLDER CD READERS CAN READ ONLY THE FIRST SESSION OF A MULTISESSION DISC.

COMPACT DISC AVERAGE TRANSFER RATES

Note 1: The normal CD transfer rate from the disc is 75 blocks per second.

Note 2: The average transfer rates shown are in BYTES PER SECOND.

Read/Write Speed	Audio (2,352 Bytes/Block)	CD-ROM Mode 1 (2,048 Bytes/Block)	CD-ROM Mode 2 (2,336 Bytes/Block)
1X	176,000	153,600	175,200
2X	352,800	307,200	350,400
4X	705,600	614,400	700,800
6X	1,058,400	921,600	1,051,200

Read/Write Speed	CD-i & (XA) Form 1 (2,048 Bytes/Block)	CD-i & (XA) Form 2 (2,324 Bytes/Block)
1X	153,600	174,300
2X	307,200	348,600
4X	614,400	697,200
6X	921,600	1,045,800

Source: Craig Schwarz, Eastman Kodak Company

WHAT IS THE DIFFERENCE BETWEEN CD-R “FIXATION” AND “FINALIZATION”?

- Fixation is the process of writing the lead-in and lead-out information to the disc. This process finishes a writing session and creates a table of contents.
- Fixation is required for a CD-ROM or CD-Audio player to play the disc. Discs which are “fixated for append” can have additional sessions recorded, with their own session lead-in and lead-out, creating a multisession disc.
- When a disc is “finalized” the absolute lead-in and lead-out for the entire disc is written, along with information which tells the reader not to look for subsequent sessions.

This final table of contents (TOC) conforms to the ISO 9660 file standard.

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