CDS-3110
CD-ROM

User's Guide

ORCHID

Orchid Technology
45365 Northport Loop West
Fremont, CA 94538-9973

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CD-ROM User's Guide

INTRODUCTION

The Orchid CDS-3110 double-speed CD-ROM drive combines fast access, quick data transfers and MPC Level II compatibility in an affordable, easy-to-use package. It supports both Mitsumi and Sony interface standards and is perfect for use with PC sound cards and accessories.

Features:

- Supports data transfer rates of 307.2KB per second.

- Operates with AT BUS interface cards capable of 8-bit I/O, 8-bit DMA or 16-bit DMA.

- Audio playback capability (CD-DA format, Red Book) through line-out or headphone.

- Four times oversampling with an integrated digital filter.

- Supports CD-ROM (Yellow Book) Mode 1 and Mode 2, which includes CD-XA and CD-I formats.

- Supports MSDOS CD Extension (MSCDEX 2.21) or above.

- Supports the Kodak Multi-session PhotoCD format.

- A motorized tray loading system.

- Equipped with a three-beam focusing and tracking mechanism.

- CD-Audio Direct Play with Play/Skip track button.

System Requirements

You need the following equipment for installing the CDS-3110 CD-ROM drive:

- IBM PC / AT or compatible computer

- 3.5" floppy drive

- CDS-3110 Interface Card or compatible

- Multimedia sound card, such as the Orchid Technology SoundWave 32 or GameWave products

The CDS-3110 CD-ROM reads CD-ROM discs from ISO9660 or High Sierra Group (HSG). It requires MSDOS CD-ROM Extension (MSCDEX) and CDS-3110 drivers in order for the CD-ROM to function properly. See the Software Installation section for more information on the drivers.

HARDWARE INSTALLATION

Before installing the CD-ROM drive, make sure that the computer power is turned off and the power cord is disconnected from the wall socket.

Procedures:

1. Install the CD-ROM drive into a 5.25" bay of your computer, using the mounting screves (see the Figure below).

INTERFACE CARD

POWER SUPPLY
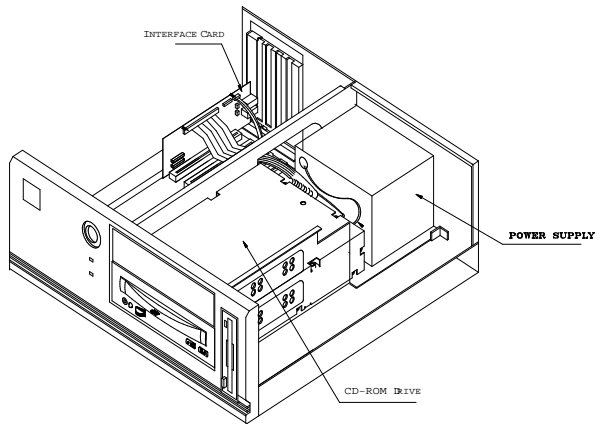
CD-ROM DRIVE

Figure 1.1: CD-ROM Drive Installation

2. Verify the jumper settings of the Interface Card (see section "Interface Card"). *NOTE:* Please write down your jumper settings for reference during the software installation.

3. Install the Interface Card into an available 16-bit slot on the motherboard.

4. Connect the 40-pin drive interface cable at the rear of the CD-ROM drive (see Figure 1.2). Make sure that Pin 1 on the cable (colored stripe) matches up with Pin 1 on the CD-ROM drive connector. *NOTE:* Pin 1 is close to the four-pin power connector.

5. Connect the other end of the 40-pin cable to the

Try to avoid excessive twists or bends in the cable that might damage it or interfere with other boards in your computer.

interface card's 40-pin connector. Be sure to match the colored stripe to Pin 1 of the interface card's 40-pin connector.

6. Connect the three-pin audio cable to the audio line output connector at the rear of the drive (see figure below).
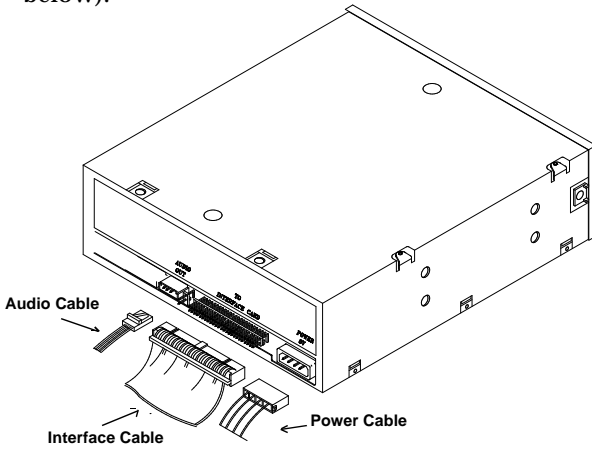
Figure: 1.2: CD-ROM Back Panel

7. Connect the other end of the three-pin audio cable to Jumper JP4 on the interface card (see Figure 1.3).

8. Connect an available DC power cable from the PC's power supply to the DC power connector at the rear of the CD-ROM drive.

9. Replace the cover of your computer along with the previously removed cables and power cord.

RCA Jacks

RCA (audio) jacks are provided for audio out connection to an external audio amplifier (see Figure 1.3). The red connector is for the Right connection; the white connector is for the Left connection.

If you are using a sound card, you can connect the three-pin audio cable to the audio connector on your sound card.

Interface Card

The Interface Card connects to the CD-ROM drive and supports 8-bit I/O, 8-bit DMA and 16-bit DMA. The I/O, DMA and IRQ address settings may need to be configured to avoid address conflict(s). Before installing the Interface Card, verify the jumper settings. The jumper locations are shown in the diagram below:
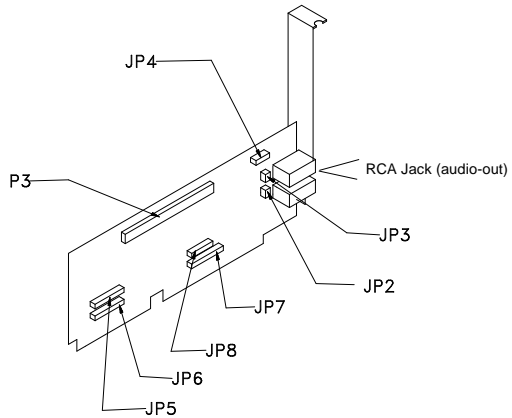
Figure: 1.3: Interface Card Jumper Locations

A conflict may occur if you have another card in your system using the same addresses as the Interface Card. Resolve the conflict by selecting another available address.

Jumper Settings

Jumper	Jumper Setting
P3	40-pin connector to the CD-ROM drive
JP4	Audio-In from CD-ROM

Jumper	Pin	Description
JP2	1-2	Optional DAC Select
JP3	2-3	Audio-In Select

JP5 - DMA Acknowledge Select	
1 - 2	DACK 0
3 - 4	1
5 - 6	2
7 - 8	3
9 - 10	5
11 - 12	6
* 13 - 14	7

JP6 - DMA Request	
1 - 2	DRQ 0
3 - 4	1
5 - 6	2
7 - 8	3
9 - 10	5
11 - 12	6
* 13 - 14	7

JP7 - Interrupt Request	
1 - 2	IRQ 3
3 - 4	4
5 - 6	5
7 - 8	6
9 - 10	7
11 - 12	9
13 - 14	10
* 15 - 16	11

JP8 - I/O Address	
1 - 2	300H
* 3 - 4	320H
5 - 6	330H
7 - 8	340H
9 - 10	360H

* Default Setting

OPERATION

Front Panel Features

Figure: 1.4: Front Panel

- Head Phone jack - for attaching headphones.

- Power LED - lights while data is read from disc; blinks during seek operation.

- Volume Control - adjusts headphone sound level.

- Quick Select - the right button has three states: *Eject, Close* and *Stop.* The left button has two states: *Play* and *Skip* next track.
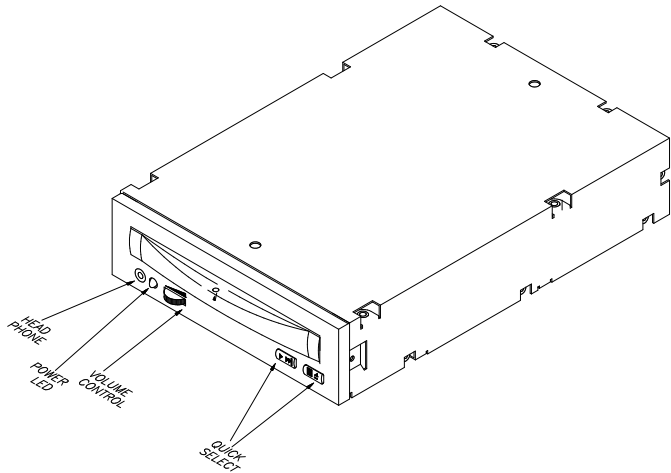
After you press the Eject button, there is a 1-2 second(s) delay before opening, because the drive is spinning down.

Back Panel Features

- Audio Out - three-pin connector.

- To Interface Card - 40-pin connector for 40-pin ribbon interface cable.

- Power - provides power to the CD-ROM drive from a standard power supply.
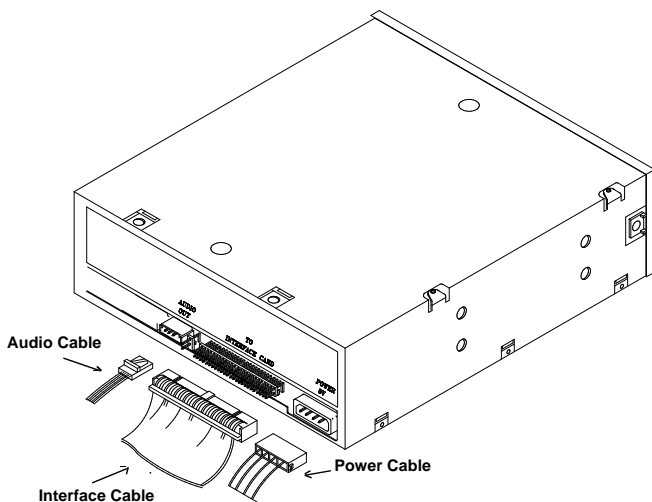
Figure: 1.5: Back Panel

Disc Handling

- Handle the disc only by its edges. Do not touch the surface of the disc.

- Never write on disc with a hard object, such as a ball-point pen or pencil and never affix any label directly on a disc.

- Never bend a disc.

- Do not use or store a disc in areas subjected to high temperatures or humidity.

- Store a disc in its case to avoid dust contamination, scratches, bending or other damage.

- For best results, periodically wipe each disc with a soft, dry cloth, gently rubbing outward from the center.

SOFTWARE INSTALLATION

In order to access your CD-ROM drive, two device drivers are required. The MSCDEX.EXE program (revision 2.21 or above) is the Microsoft CD-ROM Extension file driver. The CDD.SYS program is the CD-ROM driver.

The CD-ROM device drivers are automatically installed using the INSTALL.EXE program. In addition, the install program provides easy software configuration of the CD-ROM hardware settings and recommendations for use with network servers.

Using INSTALL.EXE

If you wish to make a backup copy of your original diskette, use the DOS DISKCOPY utility command.

INSTALL.EXE is an easy-to-use menu driven installation program, which allows you to automatically install the CD-ROM software device drivers to your hard disk drive. Insert the CD-ROM Driver Disk into your drive A: and type the following:

A:\INSTALL   `Enter ←`

From the CD-ROM Driver Installation menu, press any key, and the following menu will appear:

```
┌─────────────────── Orchid Technology ═══════════════┐
│                                                      │
│        ┌────────────────────────────────┐           │
│        │   CD-ROM  Driver Installation   │           │
│        │                                 │           │
│        │   Orchid Sound Products         │           │
│        │                                 │           │
│        │   Orchid Video Products         │           │
│        │                                 │           │
│        │   Other Orchid Products         │           │
│        │                                 │           │
│        │   Orchid Technical Support      │           │
│        └────────────────────────────────┘           │
│                                                      │
└ ↑↓=Move Cursor Esc=Previous Menu ↵=Select  F1=Help F3=Abort ┘
```
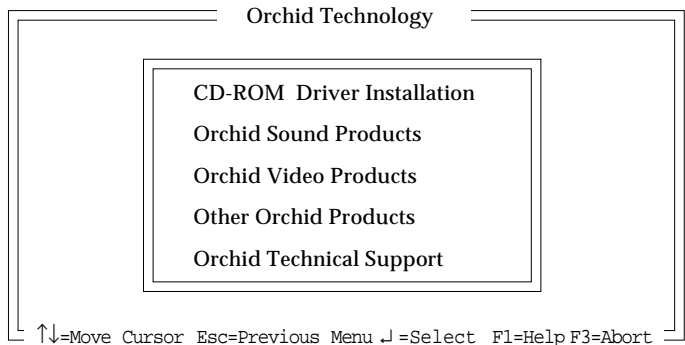
Figure 1.6 INSTALL Main Menu Screen

From the Main Menu, select your installation choice by using the <↑↓> arrow keys and press <ENTER>. Proceed through the installation as prompted by the INSTALL.EXE program.

The CD-ROM Driver Installation selection will allow you to software select the I/O, DMA and IRQ addresses for your CD-ROM drive. *NOTE:* The addresses selected must match the addresses on the Interface Card. Once the software is installed, the INSTALL program will automatically update your AUTOEXEC.BAT and CONFIG.SYS files with the following command lines:

AUTOEXEC.BAT

```
C:\ORCHID\MSCDEX.EXE /d:MSCD0001 /M:10
```

CONFIG.SYS

```
DEVICE=C:\ORCHID\CDD.SYS /d:MSCD0001 /p:320
/m:7 /i:11 /v
```

Once the software setup is complete, you must reboot your system. The CD-ROM drive is initialized on bootup. If it does not initialize on bootup, you may have an I/O, DMA or IRQ address conflict. Verify the address settings of the other peripherals in your system to correct the address conflict(s).

Device Drivers

For any changes or modifications to the device drivers, you may rerun the INSTALL program, use a text editor such as MS-DOS "EDIT," or your favorite text editing program. The following syntax is used for the MSCDEX.EXE device driver:

```
[drive:\][path\]mscdex.exe /d:device_name [/l:m]
```

The parameters are defined as follows:

/d: Specifies the device name of the CD-ROM drive.
      The driver1 parameter must match the param-
      eter specified by the /D switch on the
      CONFIG.SYS command that starts the corre-
      sponding CD-ROM device driver.

      The MSCDEX command must include at least
      one /D switch. To install additional CD-ROM
      device drivers, specify an additional /D switch
      for each device driver.

/l: Specifies the drive letter of the first CD-ROM
      drive. If you have more than one CD-ROM
      drive, MS-DOS assigns additional CD-ROM
      drives subsequent available drive letters.

/m: Specifies the number of sector buffers.

/e   Specifies that the CD-ROM driver use expanded
      memory, if available, to store sector buffers.

/k   Specifies that MS-DOS should recognize CD-
      ROM volumes encoded in Kanji. By default,
      MS-DOS does not recognize Kanji CD-ROM
      volumes.

/s   Enables sharing of CD-ROM drives on MS-
      NET or Windows for Workgroups servers.

/v   Directs MSCDEX to display memory statistics
      when it starts.

The following syntax is used for the CDD.SYS device
driver:

```
device = [drive:\] [path\] cdd.sys /d:device_name
[/p:nnn] [/m:x] [/i:n] [/v]
```

The parameters are defined as follows:

[drive:\] [path\] specifies the drive and path name
where you copied the CDD.SYS file.

/d: Specifies the device name of the CD-ROM drive and must be identical to the device name specified by MSCDEX.

/p: Specifies the base port address of the Interface Card. Possible values for nnn = 300, 320, 330, 340 and 360 *(default = 320).*

/m: Specifies the data transfer mode. Possible specifications for x = s,0,1,2,3,5,6,7. S selects the programmed I/O mode. 0,1,2,3,5,6 or 7 selects the respective DMA channel. If /m is not specified, the data transfer mode defaults to programmed I/O mode.

NOTE: The DMA channel selected has to match the jumper setting on the Interface Card.

/i: Specifies the interrupt used. Possible interrupt settings are 3,4,5,6,7,9,10 and 11.

NOTE: The interrupt selection has to match the jumper setting on the Interface Card.

/v: Turns on verbose mode of the driver. The driver will display information about its installation.

SPECIFICATIONS

Data Capacity
Mode 1 - 553MBytes (Block size 2048 Bytes)
Mode 2 - 635MBytes (Block size 2336 Bytes)

Rotational Speed
Inner track 530 rpm (CLV = 1.4m/s)
Outer track 200 rpm (CLV = 1.2m/s)

Access Time
Full stroke - 800 msec (maximum)
1/3 stroke - 380 msec (average)

Drive Transfer Capability
8-bit I/O or 8-bit DMA (in 8-bit mode)
16-bit DMA (in 16-bit mode)
Date Transfer Rate = 307KB/sec.
Burst Transfer Rate = 1.4MB/sec.

Error Rate
Soft read error : less than 10^{-9}
Hard read error : less than 10^{-15}
Seek error : less than 10^{-6}

Audio Output Level
Line out (Vrms) = 1.2 Volt RMS
Headphone output = 1.2 Volt RMS (max.)

Laser
Type	GaAIAs
Wavelength	780nm
Output Power	0.3mW

Physical Dimension
146x208x41.5 (mm)
5.75x8.19x1.63 (inches)

Weight
1.5 kg (3.3 lbs)

Environment
   Operational Temperature
      5°C to 55°C

   Operating Humidity
      5°C to 90% RH (non-condensing)

   Storage Temperature
      -25°C to 70°C (max. 70°C for 48 hours)

   Storage Humidity
      5 to 95% RH

Power Requirement
   5V DC

MTBF
   30,000 P.O.H

Glossary of Terms

DAC (Digital Analog Converter)   A special interface circuit that transforms digital signals of computer circuits into analog VGA and SVGA signals.

DACK (DMA ACKnowledge)   Indicates that a request has been received by the DMA controller, and provides the rest of the system with an acknowledgement of the DMA request. There is a DACK available for each of the DMA channels available on the bus.

DMA (Direct Memory Access)   A method of transporting data between memory and peripherals.

I/O (Input/Output)   Refers to the transfer of data in and out of the system.

IRQ (Interrupt)   The signal a device gives the CPU (Central Processing Unit) to let it know that it requires attention. Interrupts suspend activity of the CPU for various lengths of time, then returns control to the CPU when attention has been given.

FCC CLASS B WARNING

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 on a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communication.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception—you are encouraged to try to correct the interference by one or more of the following measures:

- Relocate the receiving end
- 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

Operation of this equipment in a residential area may cause interference in which case you will be required to correct the interference at your own expense.

CAUTION

Changes or modifications not expressly approved by the manufacturer responsible or compliance could void your authority to operate the equipment.