

# **YAMAHA**

# **CDR400At**

# **SERIES**

**User Guide**  
**Guide de l'utilisateur**  
**Bedienungsanleitung**



# **YAMAHA**

# COMPLIANCE INFORMATION STATEMENT

## (DECLARATION OF CONFORMITY PROCEDURE)

Responsible Party: Yamaha Systems Technology, Inc.  
Address: 100 Century Center Court  
San Jose, California 95112  
Telephone: (408) 467-2330  
FAX: (408) 437-8791  
Type of Equipment: CD Recorder  
Model Name: CDR400At  
CDR400At-NB

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following 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.

See user manual instructions if interference to radio reception is suspected.

### FCC INFORMATION (U.S.A.)

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

2. IMPORTANT: When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

3. NOTE: This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the product "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial type cable.

If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Systems Technology, Inc. 100 Century Center Court, San Jose, CA95112, U.S.A.

- This manual applies to the CDR400At and CDR400At-NB.  
The CDR400At front panel displays the YAMAHA brand name.  
The CDR400At-NB front panel does not display a brand name.

**Laser Diode Properties**

Material : GaAlAs

Wavelength : 782-789 nm

Emission Duration : Continuous

Laser Output Power : Less than 44.6  $\mu$ W\*

\* This output is value measured at a distance 200mm from the objective lens surface on the optical pick-up block.

ANSI Class : Class 1

**CAUTION**

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

**CLASS 1 LASER PRODUCT  
LASER KLASSE 1 PRODUKT**

This compact disc player is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT label must be located on the exterior.

VORSICHT : UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG  
GEOFFNET. NICHT DEM STRAHL AUSSETZEN.

VARNING : OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH  
SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN ÄR FARLIG.

VARO! : AVATAESSA JA SUOJALUKITUS OHITETTAESSA OLET  
ALTTINA NÄKYMÄTTÖMÄLLE LASERS TEILYLLE. ÄLÄ KATSO SÄTESSEN.

ADVARSEL : USYNLIG LASERSTRALNING VED ÅBNING NÄR SIKKERHETS-  
BYDERE ER UDE AF FUNKTION. UNDGÅ UDSETTELS FOR STRÅLING.

Varningsanvisning för  
laserstrålning.

## **! WARNING !**

- The temperature where CDR400At is located should be between 5°C and 40°C (41°F – 104°F), when used in a fan-cooled system.
- Do not disassemble the CDR400At cover to reduce the risk of electric shock.
- Always remove the disc before transporting CDR400At.

## **Important Precautions**

- Please read the following precautions before attempting to operate the CDR400At.
- Before recording a disc, be sure to clean the disc and tray using an air aerosol-type dust remover. A dust particle on the disc may cause recording to fail, producing an unusable disc.
- Always record in a dust-free environment. If the disc must be removed from the CDR400At before recording is finished, store the disc in a clean, dust-free environment.
- The CDR400At contains no user serviceable parts. Refer all servicing to qualified personnel.
- If any of the following should occur, the CDR400At should be serviced by qualified personnel:

Metal objects or liquids get inside the CDR400At.

The CDR400At does not operate normally or a marked change in performance is noticed.

- Do not place heavy objects on the CD-R discs.
- Do not subject the CDR400At and computer to impact or shock when in use, as this may impair recording or playback.
- Yamaha is not responsible for any data or information losses resulting from the operation of the CDR400At.

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## Introduction

Thank you for purchasing a Yamaha CDR400At drive. Please read this manual before using the drive in order to make the best use of the superior CDR400At functions.

After reading, please retain this manual for future reference.

### CDR400At Features

#### ■ **4xS Recording - 6xS Reading**

The CDR400At is a CD-ROM recorder capable of recording at quad speed (4xS), double speed (2xS), or normal speed (1xS).

It can read discs at up to 6xS.

#### ■ **Compatible with Seven Different Formats**

The CDR400At can both record and read seven different formats: CD-ROM, CD-ROM XA, CD-I, CD-DA, CD-Bridge (multisession), CD-Extra, and Video CD. The CDR400At is also equipped with an analog audio output terminal (headphones) for CD-DA.

#### ■ **SCSI 2 Interface for Data Transfer**

The CDR400At features SCSI 2, the second generation SCSI interface for connecting computers and peripheral devices.

#### ■ **Compatible with Windows 95 Plug and Play**

SCSI IDs are set automatically by the SCAM protocol (level 1).

#### ■ **Orange Book Part 2 Compatible 5-Mode Recording**

The CDR400At conforms to the five recording modes outlined in the Orange Book Part 2: Track at Once, Multisession, Disc at Once, Session at Once, and Packet Writing.

## **Orange Book Compatible Recording**

### **Track at Once**

In this mode, data can be recorded to disc one track at a time. Discs recorded in this mode cannot be played in CD players or CD-ROM drives other than a CD-R drive until the session is closed.

### **Multisession**

In this mode, data can be recorded to disc in stages (one session at a time). Additional data can be written later.

### **Disc at Once**

In this mode, data can be recorded to an entire disc in one pass. It is not possible to write additional data later.

### **Session at Once**

In this mode, data can be recorded to disc one session at a time. To use this mode, your software must support Session at Once recording. New sessions can be written later.

### **Packet Writing**

This is useful for data back-up. Smaller units of data can be added to tracks. To use this mode, your software must support Packet Writing. The CDR400At supports sequential packet writing.



## Chapter 1 - System Configuration

Before using the CDR400At, make sure that you have all of the items on the list of included items.

In order to use the CDR400At, you will require the following.

### Computer

The following operating environment is required:

- An IBM/AT compatible computer with a 100 MHz or faster Pentium CPU (in order to write at 4x speed), or a 100 MHz or faster 486 CPU (in order to write at 2x speed)
- A vacant slot in which to install a SCSI card or a pre-installed SCSI card
- A vacant half-height bay
- Windows 95, Windows NT4.0 or Higher
- Sufficient hard disk space

**Note:** *You will need about twice as much space on your hard disk as that required by the data you wish to write to CD-ROM.*

### SCSI card

This is required in order to connect a SCSI device (the Yamaha CDR400At) to your computer.

We recommend the following:

Adaptec SCSI cards: AHA-2940 (PCI), AHA-284x (VL), AHA-2740 (EISA), AHA-154x (ISA), etc.

### Software

Use writing software or packet writing software which supports the CDR400At or CDR400t.

### Tools

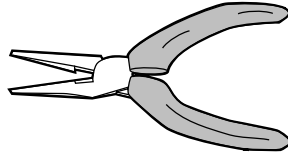
- Phillips screwdriver

This is used to remove the cover of your computer, and to install the Yamaha CDR400At drive.



- Long nose pliers

These are used to insert or remove the jumper pin when setting the SCSI ID and parity settings etc. of the Yamaha CDR400At drive.





### Discs

#### CD-R Discs

On the CDR400At, you can use conventional CD-R discs that conform to the Recordable Compact Disc Systems Part 2 (Orange Book). Yamaha recommends the following Yamaha CD-R discs:

- > CDM12Y63 ( $\phi$ 120mm, 63 minutes)
- > CDM12Y74 ( $\phi$ 120mm, 74 minutes)
- > CDM12Y74M ( $\phi$ 120mm, 74 minutes)
- > CDM12Y74T ( $\phi$ 120mm, 74 minutes)

#### Read-only Discs

You can use discs with the  logo which conform to the Compact Disc Read Only Memory standard (CD-ROM standard, Yellow Book). If you wish to use the audio functions, use discs with the  logo, which conform to the Compact Disc Digital Audio standard (Red Book).

## Chapter 2 - Installing the Yamaha CDR400At Drive

### CDR400At drive settings

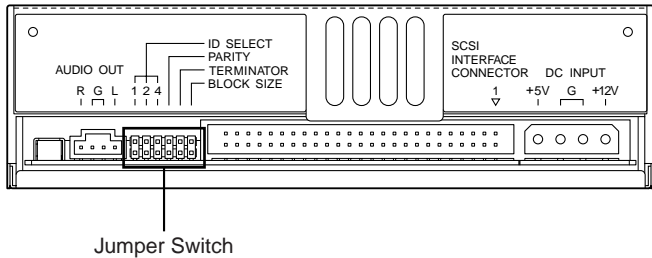
Before installing the CDR400At in your computer, you will need to set the following jumpers.

You set these jumpers by inserting jumper connectors into the jumper switch located on the rear panel of the CDR drive.

- ◆ SCSI ID settings
- ◆ Parity setting
- ◆ Terminator setting
- ◆ Block size setting

**Important:** *Use long-nose pliers to remove or insert jumper connectors. In the diagrams in this manual, solid black fill is used to indicate locations where a jumper is used to short between pins.*

### Rear Panel



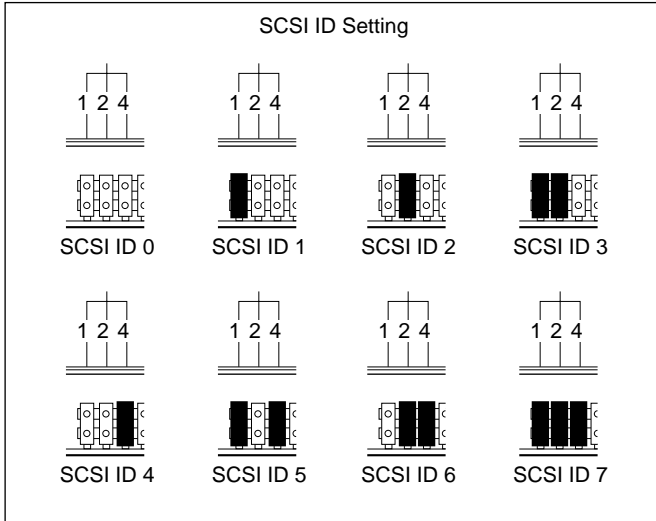
#### ◆ SCSI ID settings

The SCSI ID number is used so that the computer will recognize a connected SCSI device. You can assign 0 through 7 as the SCSI ID number. Usually, “7” is reserved for the SCSI card ID number, and “0” is reserved for the first SCSI device in the chain.

Use a number between 1 and 6 for the CDR400At. Refer to the diagram below for more information on setting the SCSI ID number. The factory set ID number is “3”.

**Important:** *If you are using other SCSI devices, be sure to use a unique ID number for each device.*

**Note:** When you are using Windows 95, and if the SCSI ID setting on the rear panel is the same as the number assigned to another SCSI device, the Plug and Play component of Windows 95 will automatically assign an unused number to the CDR400At (SCAM protocol level 1).



\* Use jumper connectors to short the locations shown in black.

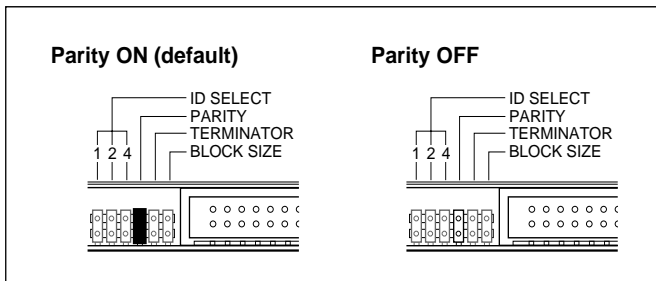
### ◆ Parity setting

**Parity ON** (with a jumper)

— Parity Check will be performed. **Normally, use this setting.**

**Parity OFF** (without a jumper)

— Parity Check will not be performed.



\* Use jumper connectors to short the locations shown in black.

### ◆ Terminator setting

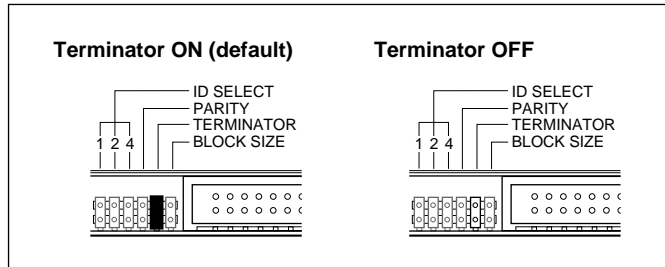
The terminator setting indicates whether or not this device is the last connected SCSI device.

#### Terminator ON (with a jumper)

- Use this setting if the CDR400At is the last device in the internal SCSI daisy-chain.

#### Terminator OFF (without a jumper)

- Use this setting if devices other than the CDR400At are in the internal SCSI daisy-chain and the CDR400At is not the last device.



\* Use jumper connectors to short the locations shown in black.

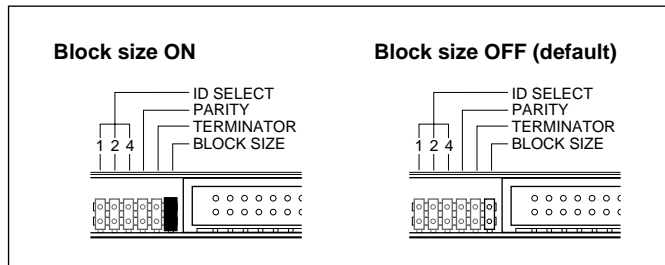
### ◆ Block size setting

#### Block size ON (with a jumper)

- Block Size is set to 512Byte/sector. This function is valid only for workstations, such as those that run UNIX.

#### Block size OFF (without a jumper)

- **Normally, use this setting.**



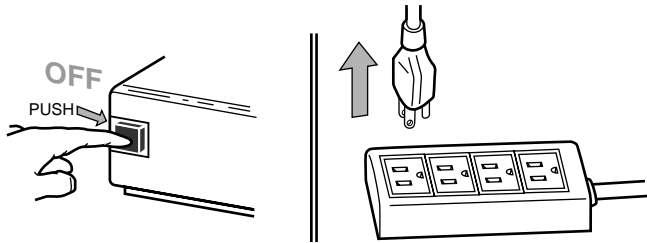
\* Use jumper connectors to short the locations shown in black.

## Installing the CDR400At drive

The following steps will differ slightly depending on the type of computer you are using. For details on removing the cover from your computer, and installing or removing internal devices, refer to the manual for your computer.

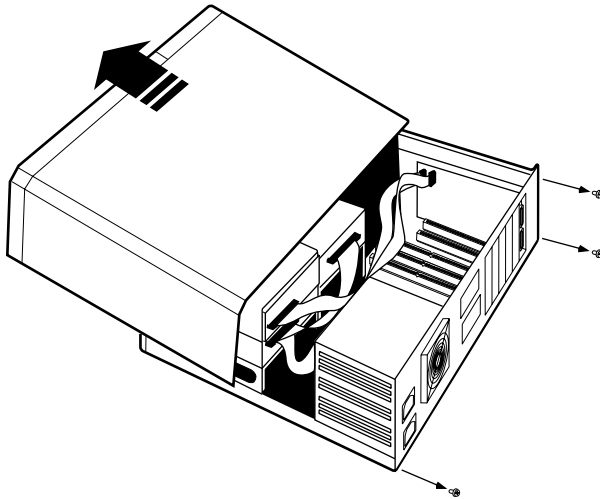
**1. Switch off your computer, and unplug it from the AC outlet.**

If you fail to do this, there is a danger of electric shock and/or of causing short circuits, which may damage the computer and/or CDR400At drive.



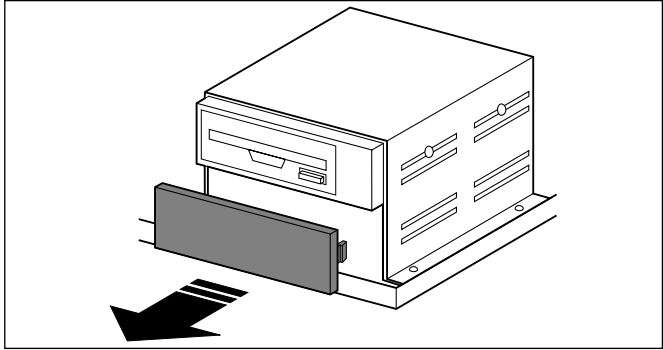
**2. Remove the cover from your computer.**

Be careful not to lose the screws that were removed.

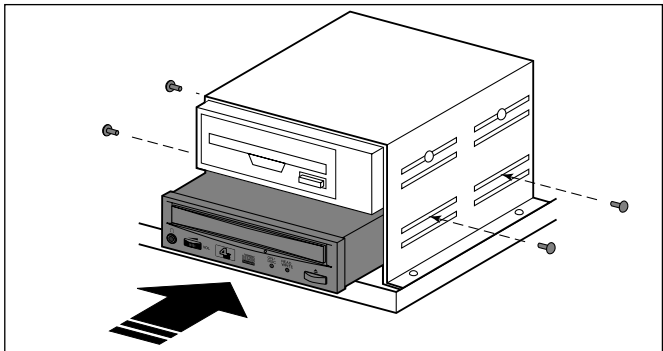


**3. Your hands or body may be holding a charge of static electricity. Touch a metallic portion of the chassis or power supply to release any such charge.**

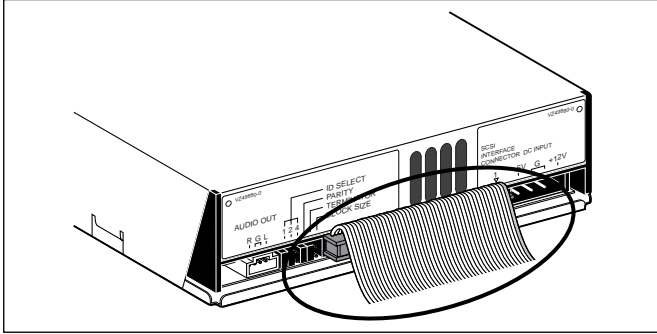
- 4. Remove the front cover of a vacant half-height drive bay.**  
For details refer to the manual of your computer.



- 5. Remove the SCSI card, and set the terminator setting of the SCSI internal circuit to the position for internal connected devices. For details refer to the manual of your SCSI card.**
- 6. Slide the CDR400At drive into the drive bay from the front.**  
At this time, be careful not to apply excessive force to the drive itself. Finger-tighten the four fastening screws, and check that there is enough room to connect the power supply cable, SCSI cable, and AUDIO cables.

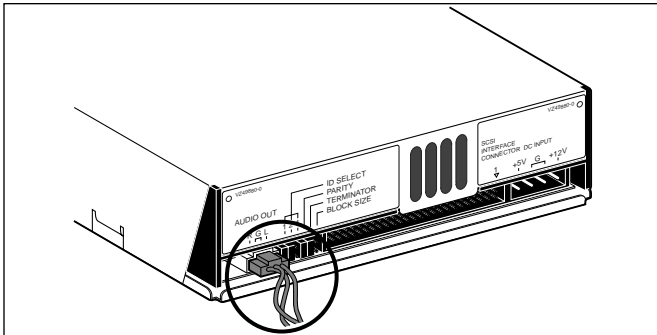


- 7. Connect the SCSI flat cable.**  
Connect the 50-pin SCSI flat cable to the SCSI card and to the SCSI interface located on the rear panel of the CDR400At drive.  
Position the connector so that the colored line is at pin 1 (your lower right).

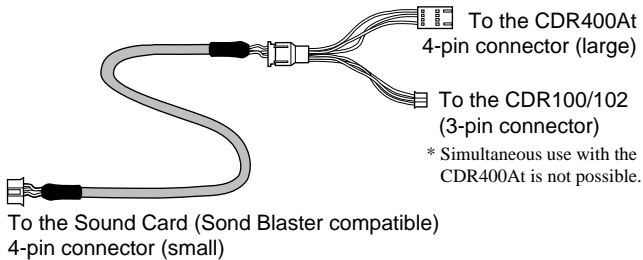


**8. Connect the AUDIO cable.**

Connect the single 4-pin connector (Sound Blaster compatible) to the sound card. Connect the 4-pin connector at the other end of the cable (the larger connector) to the AUDIO OUT connector on the CDR400At drive. The polarizing lug should be at the top.



**AUDIO cable**

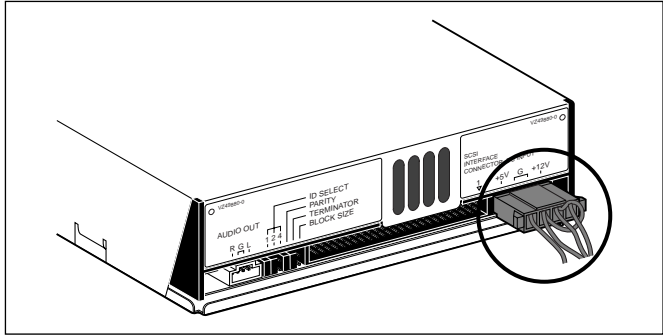




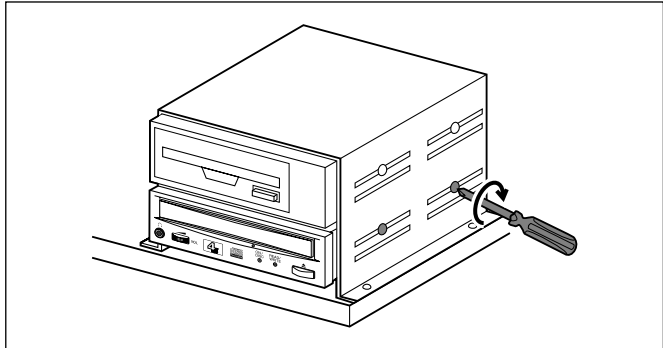
### 9. Connect the power supply cable.

Connect the +12V and +5V 4-pin power cable to the power supply interface located on the rear panel of the CDR400At drive.

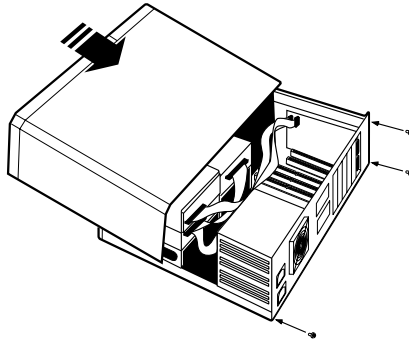
The shape of the connector makes it impossible to reverse the connections. If you have difficulty when inserting the connector, try wiggling the connector left and right while inserting it.



### 10. Tighten the four fastening screws securely.

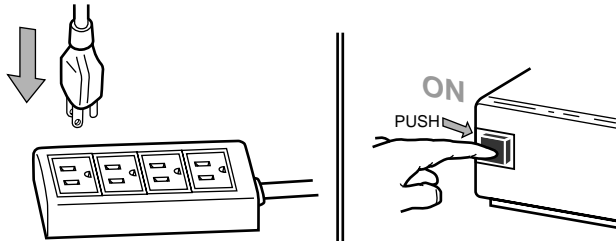


**11. Attach the cover of your computer.**



**12. Connect the power cable to an AC outlet, and switch on your computer.**

Make sure that the LED located on the panel of the CDR400At drive is lit.



**13. Start up your operating system.**

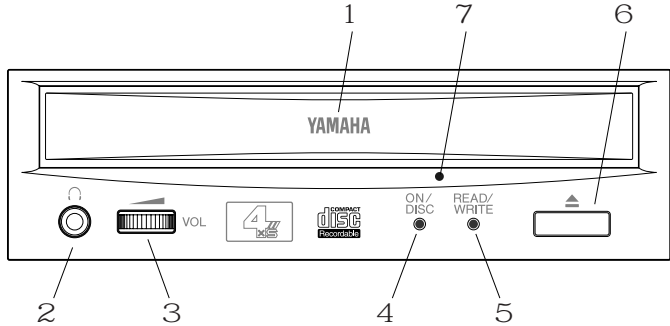
For the procedure, refer to the manual for your operation system.

**14. Install the writing software.**

For the installation procedure, refer to the manual for your writing software.

## Chapter 3 - Operation

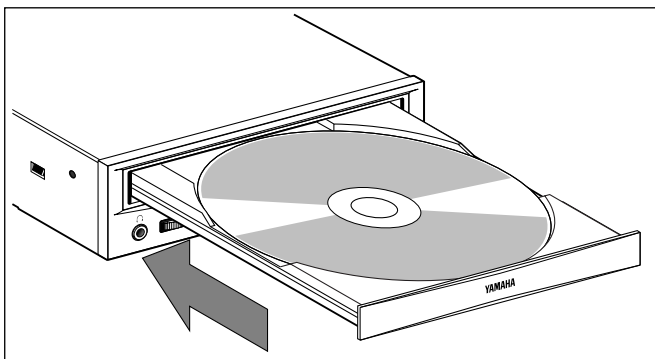
### Front Panel



- ① **Disc tray**  
The disc is inserted and ejected here. Pressing the eject button will open the tray.
- ② **Headphone jack**  
This stereo mini jack allows you to connect headphones and listen to audio.
- ③ **Headphone volume control**  
This control adjusts the volume level of the headphone output. Rotating the control clockwise will increase the volume level.
- ④ **ON/DISC LED**  
This indicator lights up in orange when the CDR400At is powered on, and lights up in green when the CDR400At contains a disc.
- ⑤ **READ/WRITE LED**  
This indicator lights up in green when data is being read, and flashes when data is being accessed. It also lights up in orange when data is being recorded on a disc.
- ⑥ **Eject button**  
This button is used to open or close the tray.
- ⑦ **Manual Eject hole**  
This is used to manually eject a disc that cannot be ejected in the normal way. It is for emergency use only.

## Loading a Disc

1. Press the eject button to open the tray.
2. Carefully place the disc, label-side up, on the disc tray.
3. Press the disc tray softly or press the eject button again to close the disc tray.



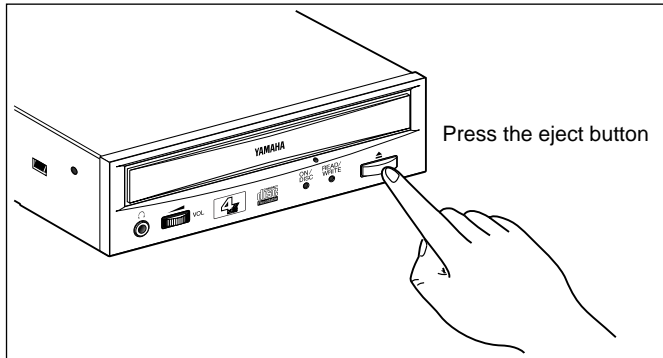
## Ejecting the Disc

**If the CDR400At is powered on:**

Press the eject button to eject the disc.

**Note:** *You cannot eject the disc if the SCSI command prohibits the eject operation while the CDR400At is reading data.*

**Caution:** *Be sure to remove the disc after it is completely ejected. (Trying to remove the disc before it is completely ejected may cause the drive to malfunction.)*



**If the CDR400At is not powered on:**

Pressing the eject button will not eject the disc.

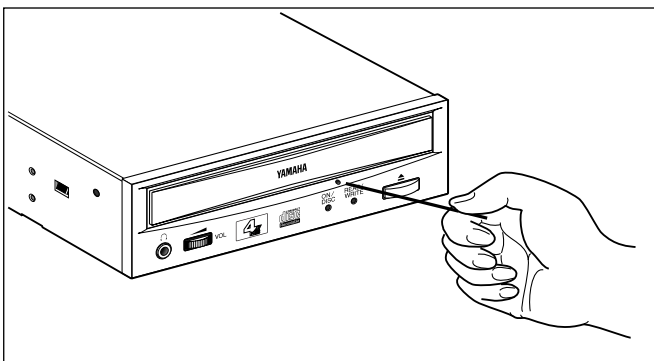
### Manual Eject (emergency use)

Here we explain how to eject the disc when it cannot be ejected in the normal way; for example, the power is shut off inadvertently or the loading mechanism fails. This technique should be used only as a last resort. Frequent use may lead to malfunction.

You'll need a pin-like object of 2 mm or less in diameter to do this. A straightened paper clip makes an ideal tool.

- 1. Insert the pin-like tool into the manual eject hole and push gently.**

The spring-loaded mechanism ejects the disc.



- 2. After manually ejecting a disc, you must turn off the power supplied to the CDR400At, then turn it on before continuing.**

## Troubleshooting

If CDR400At is not performing as expected, look up the symptoms in the following table, and take the appropriate corrective action.

<b>Symptoms</b>	<b>Corrective action</b>
The power to the CDR400At is off	<ul style="list-style-type: none"><li>• Check the DC power cable connection.</li></ul>
The power to the computer is off	<ul style="list-style-type: none"><li>• Check to see if the SCSI card is correctly installed.</li></ul>
The CDR400At is not recognized by the computer	<ul style="list-style-type: none"><li>• Check the SCSI cable connection.</li><li>• Make sure that SCSI ID numbers are assigned exclusively.</li><li>• Make sure that the last device in the SCSI daisy chain is terminated correctly.</li></ul>
The CDR400At does not operate correctly	<ul style="list-style-type: none"><li>• Install the SCSI driver software again.</li></ul>
The disc tray will not open	<ul style="list-style-type: none"><li>• Make sure that the power to the drive is turned on.</li></ul>
The disc ejects	<ul style="list-style-type: none"><li>• Make sure that the disc is seated in the tray correctly.</li></ul>
Incorrect operation	<ul style="list-style-type: none"><li>• Make sure that the disc is seated in the tray correctly.</li><li>• Make sure that you are using the correct disc.</li><li>• Make sure that there is no dust, dirt, or condensation on the disc or tray.</li></ul>

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## Specifications

Interface	SCSI 2	
Data Capacity	650MB (74 minutes) 550MB (63 minutes)	
Record/Read Speed	Writing: Normal speed, 2X speed, 4X speed Reading: Normal speed, 2X speed, 4X speed, 6X speed	
Data Transfer Rate	6xS: 900KB/sec 2xS: 300KB/sec	4xS: 600KB/sec 1xS: 150KB/sec
Burst Transfer Rate	4.2MB/sec (record asynchronous) 3.4MB/sec (read asynchronous)	
Buffer Size	2MB (500 sectors)	
Access Speed	250ms	
Installation	Horizontal	
Disc Loading	Tray	
Audio Out (normal speed)	Frequency Response Output Level	20 - 20,000Hz (Line Out) 1 Vrms (Line Out)
Power Consumption	11W (read/write)	
Power Supply	5V $\pm$ 5%, 12V $\pm$ 10%	
Environment	Temperature: +5°C - +40°C (read/write, when used in a fan-cooled system) Humidity: 25 - 80%	
Dimensions (WxHxD)	146 x 41.3 x 193.1 mm (excluding front panel)	
Weight	950g	

<b>Rear Panel</b>	<b>Connector</b>
SCSI/Power Supply	Non-shielded two-in-one, 50p + 4p
ID Selector	Short-pin 12p
Audio Out	MOLEX 53532-04

Specifications are subject to change without prior notice.



## Front Panel Indicator Key

- on: green      ◆ flashing: green      — off  
 ○ on: orange      ◇ flashing: orange

Status	ON/DISC	Read/Write
Reset	○ ■■ —	○ ■■ —
Ready (no disc)	○	—
Inserting disc	◇ ■■ ◆	—
Ejecting disc	◇	—
Ready (disc inserted)	●	—
Seeking	●	◆
Preparing to write	●	◇
Writing	●	○
Writing (test mode)	●	◇
Playback	●	●

# YAMAHA

English: If you have any questions, please contact your dealer or one of the following companies.

French: Pour plus de détails sur les produits, veuillez vous adresser à Yamaha ou au distributeur le plus proche figurant dans la liste suivante :

German: Bei weiteren Fragen wenden Sie sich bitte an Ihren Händler oder eine der folgenden Firmen.

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