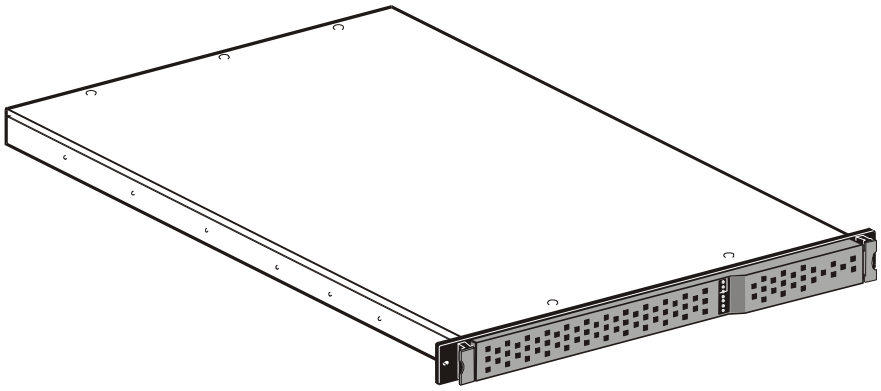
H R 1 0 1 4 M
Server Chassis

User's Manual



Released version 2.0
October 2000

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in 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 communications. However, there is no guarantee that interference will not occur in particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

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

Shielded interface cables, if any, must be used in order to comply with the emission limits.

CE Mark

This equipment is in conformity with the EMC directive.

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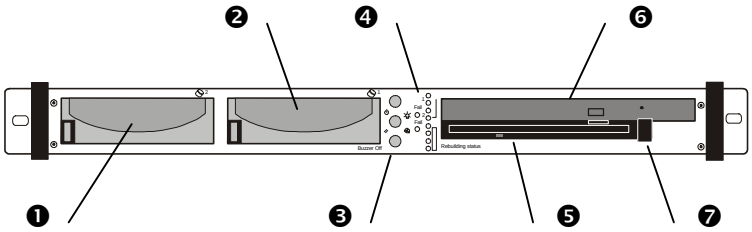
2.3 Front View: Interface

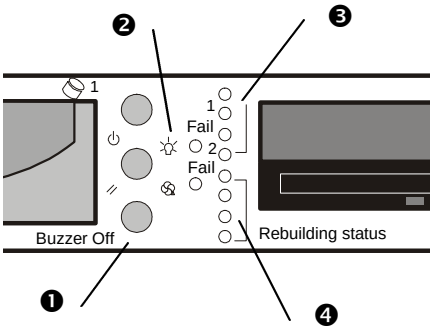
The front panel interface features the following items.



❶	IDE hot-swap disk drive bay
❷	IDE hot-swap disk drive bay
❸	Switches (see below for details)
❹	LEDS (see below for details)
❺	Diskette drive (optional) inside removable drive bay
❻	CD-ROM drive (optional) inside removable drive bay
❼	Handle of removable drive bay

2.4 Front View: Switches and LEDs

Here we will show in detail the switches and LEDs on the front panel interface.



❶	**Switches (3)**	
		The switch next to this icon is used to power the system ON/OFF
		The switch next to this icon used to reset the system
	Buzzer Off	The switch next to this text is used to turn the audible buzzer alarm ON/OFF
❷	**System Indicator LEDs (2)**	
		The LED next to this icon indicates system power status, and turns GREEN for Power ON.

The LED next to this icon indicates system status, is turned OFF for normal status. It turns ORANGE when a Fan error is detected. Series of 3 short audible alarm beeps will sound continuously. You can turn off the audible alarm by pushing “Buzzer off”, but the LED will be ON until the problem is solved.

❸ Disk Status Indicator LEDs (4)

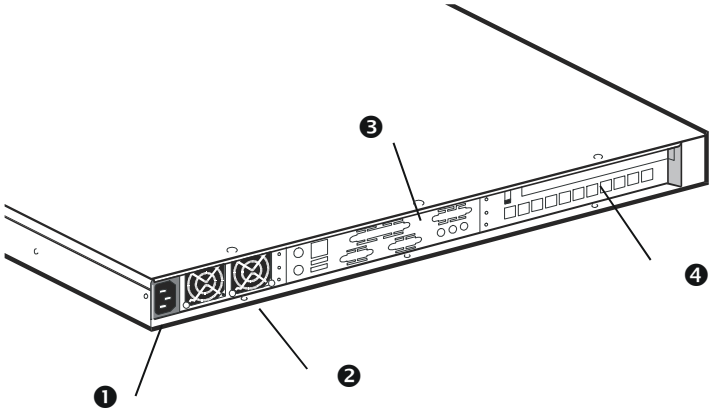
1st LED	This LED monitors the disk in the 1st drive bay. The LED next to this text will turn GREEN if a hard disk is installed. It will start flashing ORANGE when hard disk access is detected.
2nd LED	This LED monitors the error status of the drive in the 1st drive bay. If the 1st LED is off but this LED turns RED, it indicates that no hard disk is installed If the 1st LED is on and this LED turns RED, it indicates a hard disk error has occurred.
3rd LED	This LED monitors the disk in the 2nd drive bay. The LED next to this text will turn GREEN if a hard disk is installed. It will start flashing ORANGE when hard disk access is detected.
4th LED	This LED monitors the error status of the drive in the 2nd drive bay. If the 3rd LED is off but this LED turns RED, it indicates that no hard disk is installed If the 3rd LED is on and this LED turns RED, it indicates a hard disk error has occurred.

❹ Raid Status Indicator LEDs

This row of four indicators shows disks rebuilding activity. In normal operation, all lights are off. If you are using the online recovery feature to rebuild a drive, all the indicators will turn on at the same time. The first indicator (starting from the bottom) blinks and then turns off when 0 ~25% of the data has been mirrored. Then the next indicator blinks and turns off when 26~50% of the data has been mirrored, and so on.

The drive bay LED indicator that flashes GREEN/RED at the same time, is the one that is being rebuilt. E.g. If the 1st and 2nd LED are flashing while the rebuilding LEDs are on, it means the hard disk in the “1st drive Bay” is being newly installed and undergoing rebuilding.

2.5 Top and Rear View: Overview

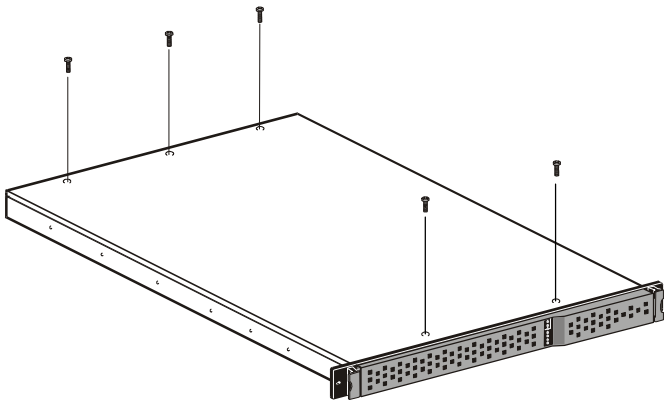


❶	Power connector
❷	Cooling fans
❸	I/O Ports
❹	PCI expansion card (optional) port

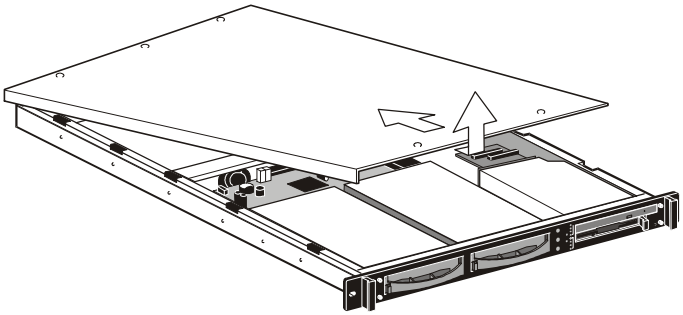
2.6 Inside the Chassis: Removing the cover

In order to access the inside components of the chassis, you need to remove the cover.

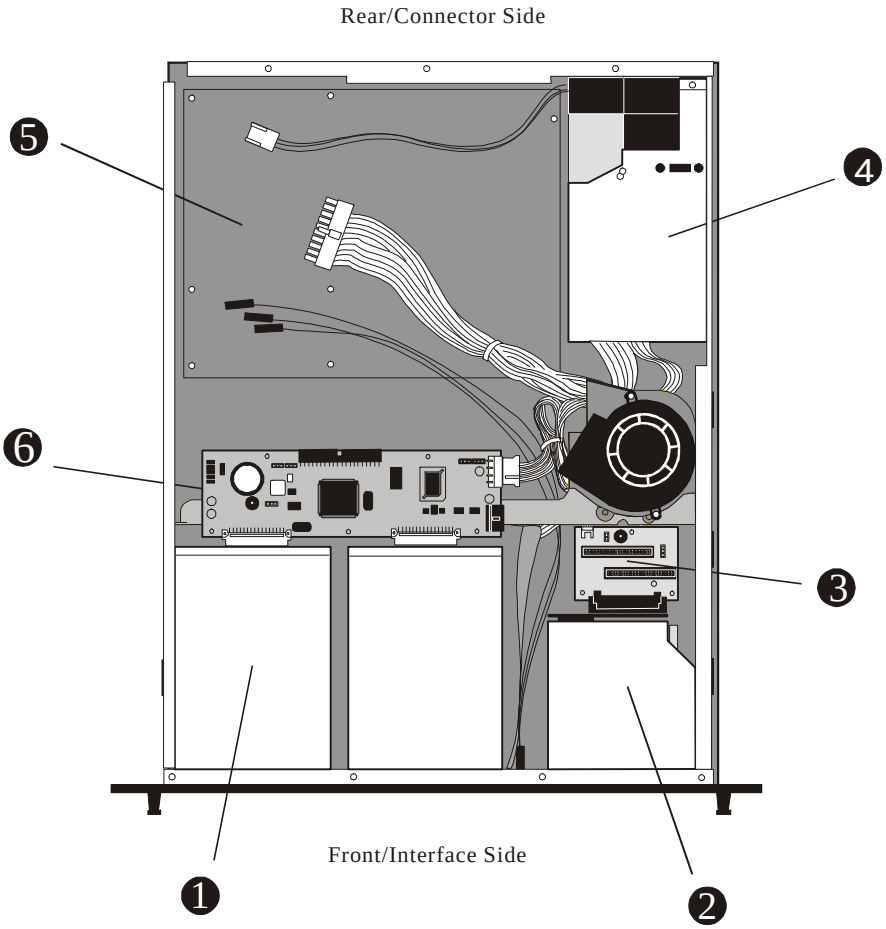
1. Power off the system and disconnect the power connector.
2. Remove the five screws on back of the top cover that hold the cover in place.



3. Slide the cover backward and lift it off the box.



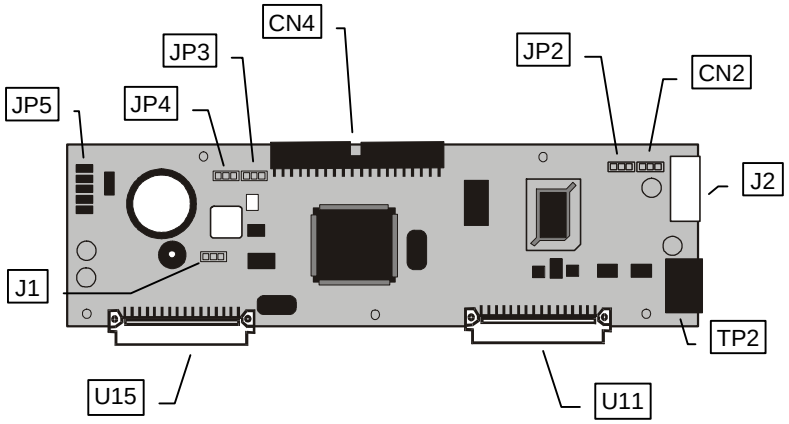
2.7 Inside the Chassis: Overview



❶	Disk drive bays
❷	CD-ROM/diskette drive bay
❸	CD-ROM/diskette drive bay controller card (see below for detail)
❹	Power supply
❺	Space for motherboard, use available cables to connect.
❻	RAID controller card (see below for detail)

2.8 Inside the Chassis: RAID Controller Card

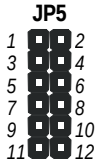
Use these drawings to find items on the RAID controller card.



J1	Connector for debugging port
J2	Power Connector
JP2	Connector for fan Sensor
JP3	Connector for fan Sensor
JP4	Connector for fan Sensor
JP5	Jumper set for multiple configurations
CN2	Connector for fan Sensor
CN4	IDE connector for motherboard cable
U11	IDE connector for hard disk drive
U15	IDE connector for hard disk drive
TP2	LED panel connector

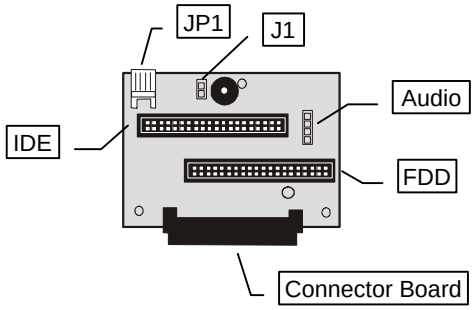
2.8.1 RAID Controller Card – JP5 Jumper Reference

This jumper set of 5 x 2 jumper pairs allows you to configure a series of system functions.



	Jumper Cap	
Pins	**Open**	**Short**
1-2	Enables fan sensor on CN2	Disables fan sensor on CN2
3-4	Enables fan sensor on JP2	Disables fan sensor on JP2
5-6	Enables fan sensor on JP3	Disables fan sensor on JP3
7-8	Enables fan sensor on JP4	Disables fan sensor on JP4
9-10	Open pins when shorting pins 11-12	Sets ACS-7500U1 as Cable Select device
11-12	Sets ACS-7500U1 as Slave device	Sets ACS-7500U1 as Master device

2.9 Inside the Chassis:CD-ROM/FDD Controller Card



J1	External speaker connector for motherboard cable
JP1	Power connector
Audio	Connector for CD-ROM Audio-out
FDD	Diskette drive connector for motherboard cable
IDE	CD-ROM IDE connector for motherboard cable
Connector board	Connector for CD-ROM/diskette drive module connector board.

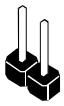
Refer to the remainder of this chapter to learn more about some specific installation issues. Next go to chapter 4 to read about the operating instructions of your server chassis.

3.3 Setting Jumpers

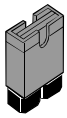
3.3.1 How to Set Jumpers

A jumper consists of two or more pins. Some jumpers might be arranged in a series with each pair of pins numbered differently. Jumpers are used to change the electronic circuits on the mainboard. When a jumper cap is placed on two jumper pins, the pins are SHORT. If the jumper cap is removed (or placed on just a single pin) the pins are OPEN.

OPEN

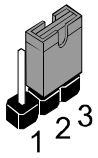


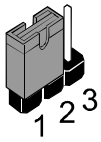
SHORT



This illustration shows a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.

This illustration shows a 3-pin jumper. The jumper cap is placed on pins 2 and 3, so this jumper setting is SHORT PINS 2-3.

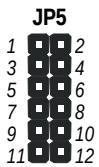




This illustration shows the same 3-pin jumper. The jumper cap is placed on pins 1 and 2, so this jumper setting is SHORT PINS 1-2.

3.3.2 RAID Controller Card – JP5 Jumper Reference

This jumper set of 5 x 2 jumper pairs allows you to configure a series of system functions.



	Jumper Cap	
Pins	**Open**	**Short**
1-2	Enables fan sensor on CN2	Disables fan sensor on CN2
3-4	Enables fan sensor on JP2	Disables fan sensor on JP2
5-6	Enables fan sensor on JP3	Disables fan sensor on JP3
7-8	Enables fan sensor on JP4	Disables fan sensor on JP4
9-10	Open pins when shorting pins 11-12	Sets ACS-7500U1 as Cable Select device
11-12	Sets ACS-7500U1 as Slave device	Sets ACS-7500U1 as Master device

3.4 About the Disk Drive Carriers

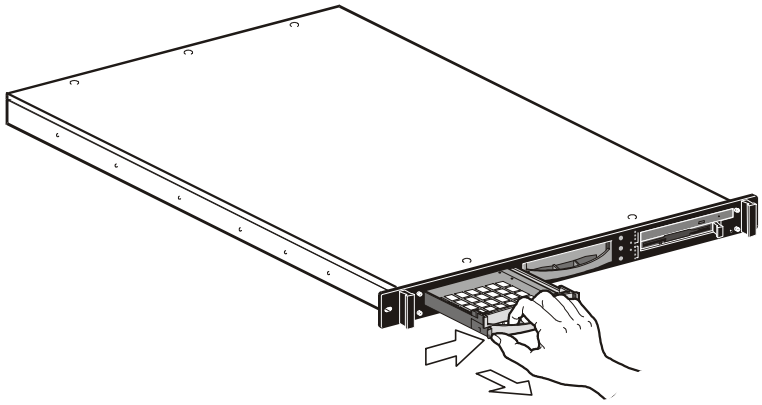
The two drive carriers inside your server chassis are used to hold the disk drives. Below we will briefly talk about how to insert a disk in the carriers and how to use the carriers. For more information about the operating instructions of the RAID system, refer to the next chapter

.

3.4.1 Using the Drive Carriers in the Server Chassis

In order to remove and replace a drive carrier follow these steps.

1. Remove the cover of the front panel.
2. Unlock a drive carrier by releasing the plastic latch, on the left side of each carrier. Push the latch to the right, while pulling and sliding the drive carrier out of the chassis using the handle on the front.

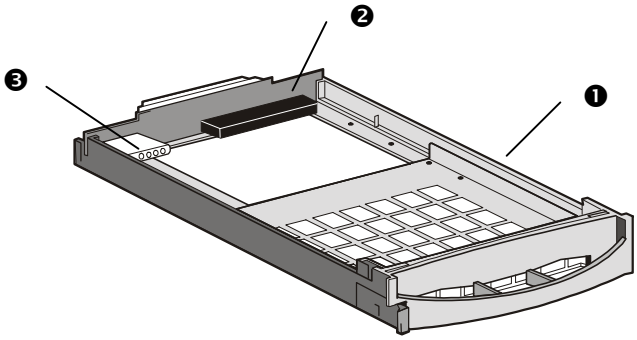


3. To replace a drive carrier, push it all the way into an empty bay of the chassis, until the latch fixes the drive in place.

3.4.2 Loading a Drive in a Drive Carrier

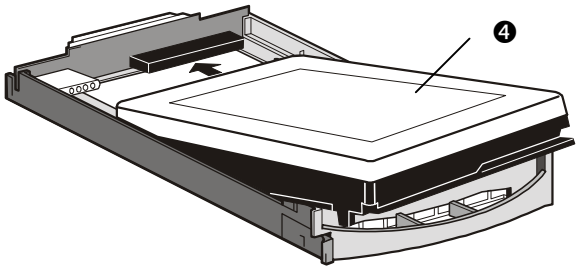
Note:
1. We recommend that you use identical disk drives in the two drive carriers.
2. The hard disk drives must be configured as Master devices. Refer to the hard disk drive documentation for more information.

1. Remove a drive carrier from the chassis as described above.



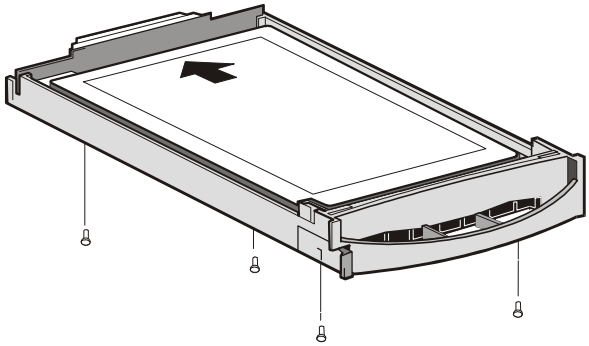
❶	Disk drive carrier (empty)
❷	IDE connector
❸	Power connector

2. Place the first disk drive in the drive carrier, so that the power and IDE connectors correspond with the connectors inside the carrier.



❹	Disk drive

3. Connect the power connector to the disk drive first, then carefully push the disk drive so that the drive's IDE and power connectors seat into the IDE and power connectors in the disk carrier.



Make sure the connectors are firmly seated, secure the disk drive in with the flat screws (6x6mm) provided, next slide the loaded disk drive carrier into the CS-101Ri chassis.

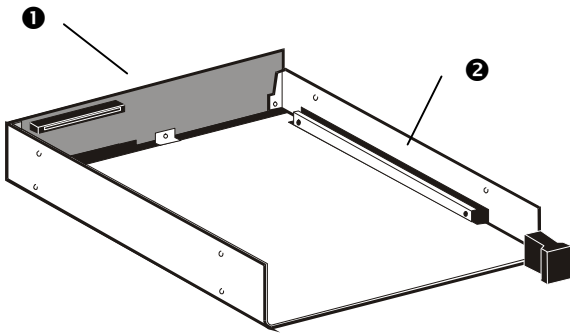
4. Repeat steps 1 to 3 for the second disk drive.
5. Refer to the next chapter for operating instructions.

3.5 About the CD-ROM/Diskette Drive Module

The CD-ROM/diskette drive module is modular and can be used with a series of identical server chassis', so you only need to assemble one set for multiple system.

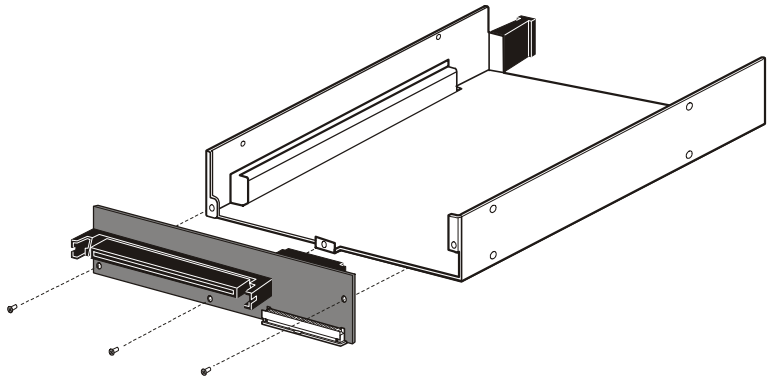
3.5.1 Assembling the CD-ROM/Diskette Drive module

Use the steps below to assemble a CD-ROM/diskette drive module.

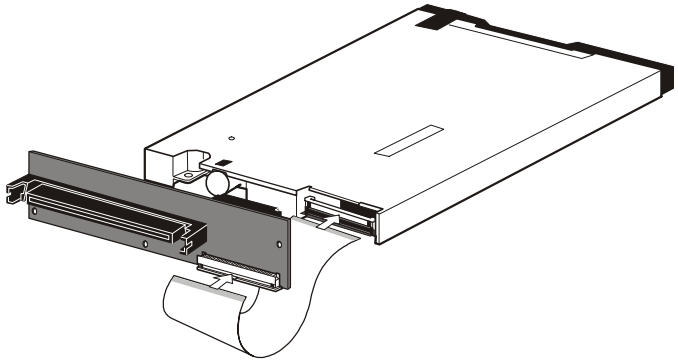


❶	Connector board
❷	Module frame

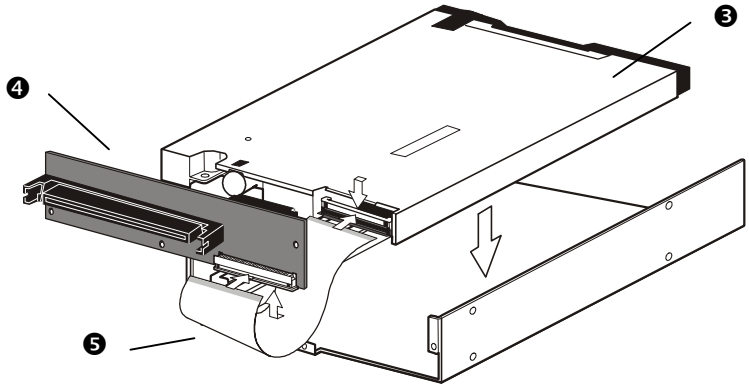
1. Disassemble the connector board (PCB) and module frame, using the three screws on the rear side of the PCB, and remove the board.



2. Install a standard slim size diskette drive. To do so, first connect a diskette drive flat flexible cable to the connector on the rear side of the diskette drive.
3. Connect the other end of the diskette drive flat flexible cable to the connector on the rear side of the connector board.

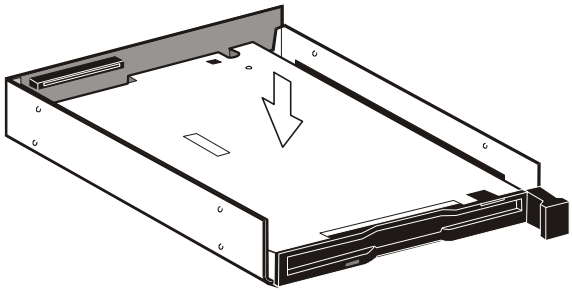


4. Next gently lower the diskette drive into the assembled frame, and fix it with the screws provided.

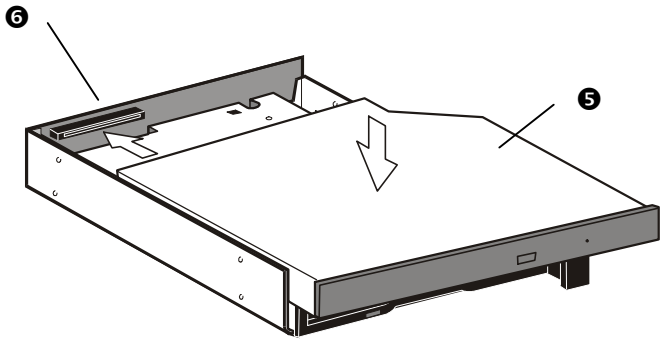


❸	Diskette drive (standard slim size)
❹	Connector board
❺	Flat flexible cable connected to both the diskette drive and the connector board

5. Replace the connector board, making sure the flat flexible cable slips between the module frame and connector board.

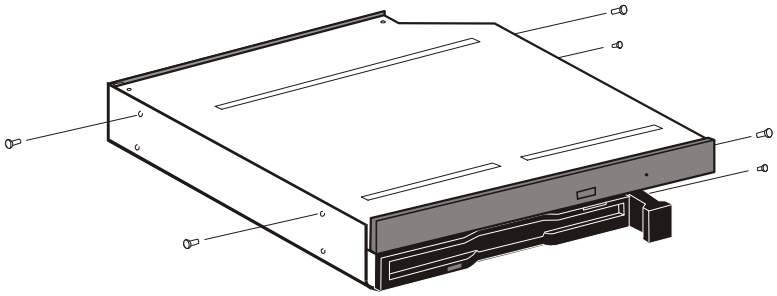


6. Install a standard slim size CD-ROM drive. Gently lower the CD-ROM drive into the assembled frame, on top of the diskette drive, while aligning the drive so that the 50pin (IDE/Power/Audio) female connector corresponds with the 50pin male connector on the inside of the connector board.
7. Carefully push the drive backwards so that the drive's connector seats into the connector of the connector board.



❺	CD-ROM drive (standard slim size)
❻	IDE connector

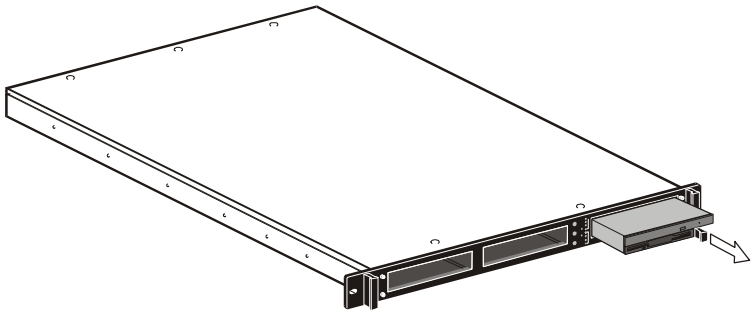
8. Fix the CD-ROM drive using two screws on both sides of the assembled module.



3.5.2 Using the CD-ROM/Diskette Drive module

In order to insert and remove the CD-ROM/diskette drive module follow these steps.

1. Remove the cover of the front panel.
2. Turn off the system and disconnect any power cables.
3. Push the module all the way into an empty CD-ROM/diskette drive bay of a chassis, until the front of the module and the chassis level.

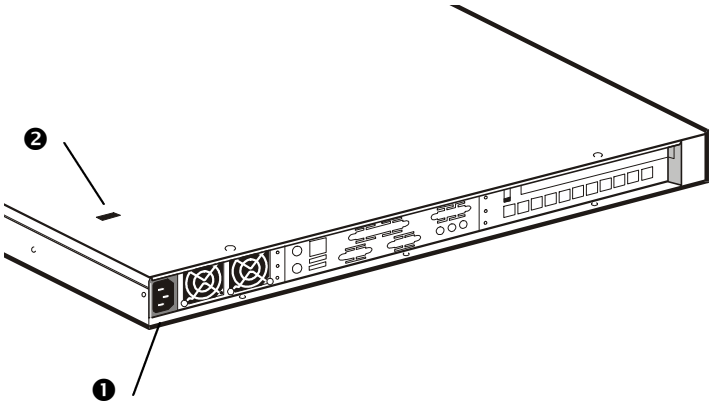


4. To remove a module from a chassis, use the black handle on the right side of the module to pull it out of the chassis.

Note: System must be POWER OFF before inserting or removing a CD-ROM/diskette drive module

3.6 Voltage Switch and Power Connection

Before connecting a power cable to the server chassis, make sure to set the voltage switch to the proper setting for your area.



❶	Power connector
❷	Voltage switch

The voltage switch can be used to set the power-input voltage to either 115 (for 90-120VAC range) or 235 (for 208-240VAC range). Failing to set this switch to the proper value can cause serious damage to your system.

Follow steps below to set your voltage switch.
1) Remove the five screws on the top cover.
2) Slide the cover backward and lift it off the chassis.
3) Check voltage on power supply, switch it to exact voltage that matches standard at your area.
4) Gently put the cover back and screw it properly.

After the input voltage is set correctly, locate the power connector on the back of the chassis and align a power cable to plug into the power connector.

4 Operating Instructions

This chapter will discuss the basic operating instructions for use with your CS101-Ri server chassis.

If you have installed two new disk drives, refer to 4.1

If you have installed one disk drive with data and one new disk drive go to 4.2.

4.1 *Situation 1:* Two new disk drives (identical or non-identical)

1. Turn on the computer system.
2. When the system prompts you to enter the BIOS setup program shortly after power-on, follow the instructions and enter the BIOS setup program. Set the hard disk drive mode to "Auto".
3. Save your changes to the BIOS setup program and reboot the system. Your system is now ready to start working and to automatically mirror all data written to it on two disk drives.
4. If you have installed non-identical hard disk drives, your computer will recognize the CS101-Ri as a single hard disk with a capacity equal to the smaller hard disk drive installed in the CS-101Ri.

4.2 *Situation 2:* Installing one drive with data and one new backup drive

1. The new backup drive must have the same capacity or a larger capacity than the drive with data.
2. Insert the carrier with the disk drive with data first, and don't insert the carrier with the new disk drive yet. This identifies the drive with data as the source drive.

Note:
When you insert a loaded carrier with a disk drive, the first drive to get inserted is designated as the source drive and the other drive becomes automatically the backup drive.

3. Turn on the computer system.
4. When the system prompts you to enter the BIOS setup program shortly after power-on, follow the instructions and enter the BIOS setup program. Set the hard disk drive mode to "Auto".
5. Save your changes to the BIOS setup program and reboot the system.
6. After the boot process is complete, insert the carrier with the new drive. This identifies the new drive as the backup drive.
7. The system will immediately begin mirroring the data from the first drive to the backup drive. Any old data on the backup drive will be lost, and is overwritten with the mirror image of the first drive.

Note:
You can repeat this procedure twice in order to install a working CS-101Ri server chassis with a new pair of larger drives without losing any data. In that case, you can omit steps 3, 4 and 5. However, under DOS and Windows 3.1/95/98, you might not be able to access the extra space if the existing data is stored in an extended DOS partition. Under Windows NT or 2000, you can use the Disk Administrator to create new partitions in the extra space of larger drives.

4.3 Online CS-101Ri Feature

The online CS-101Ri feature allows you to hot swap a failed disk drive with a new one, automatically recovering all data to the new drive with no system down time. When the front panel indicators alert you that a drive has failed, follow these instructions.

1. Leave the system turned on. Remove the carrier of the disk drive that has failed and slide it out of the chassis.

> ***Note:***
> The CS-101Ri system will continue to save data to the remaining disk. No current or new data is lost while you are replacing the failed drive.

2. Remove the failed disk drive from the carrier and install a new one according to the instructions given before.
3. Slide the carrier with the new drive into the server chassis.
4. The system will immediately begin mirroring the data from the first drive to the new drive. Any data on the new drive is overwritten with the mirror image of the first drive.

4.4 Rebuilding LED Error Status Display

Use the table below to identify the status of the Raid Status Indicator LEDs.

❍ ● ● ●	Disk No Response	❍ ● ● ❍	Disk failure
❍ ● ❍ ❍	Target disk size smaller than source disk size	❍ ❍ ● ❍	Target disk UDMA Mode smaller than source disk
❍ ❍ ❍ ●	Target disk has bad sector(s)	❍ ❍ ❍ ❍	System OK