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For Europe

CE This product is in conformity with the EMC directive.

Printed in Taiwan

Table of Contents

INTRODUCTION

Getting Started

Congratulations on your purchase of the DA-950/DA-951 Keep-It-Safe. To quickly get you started, read this introduction to learn about the conventions used and how best to navigate this manual.

This manual covers the following areas: To get your hardware up and running, go to the first chapter "Setting up Your DA-950/DA-951". For further information on the workings of your hardware such as the Mobile Rack and Redundant Power Supply, see the appropriate chapters. For information about the CTL-9500 RAID Controller, please see the included manual called "CTL-9500 User's Manual".

Your DA-950/DA-951 Keep-It-Safe

The DA-950/DA-951 Keep-It-Safe is the ideal storage device for network computing. The DA-950/DA-951 includes the CTL-9500 RAID Controller, which has its own GUI for setting up and monitoring the subsystem. In addition to the built-in RAID Controller GUI, the DA-950/DA-951 also comes with a RS-232 port, giving you more interface choice. Figure 1.1 and 1.2 show the front panels of the DA-950 and DA-951.

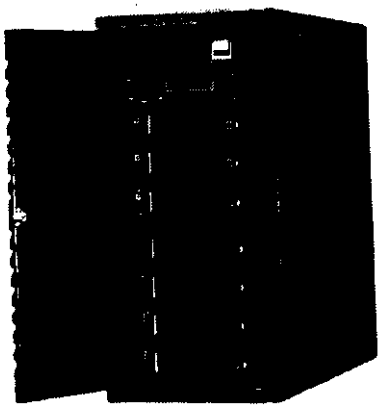


Figure 1.1 DA-950

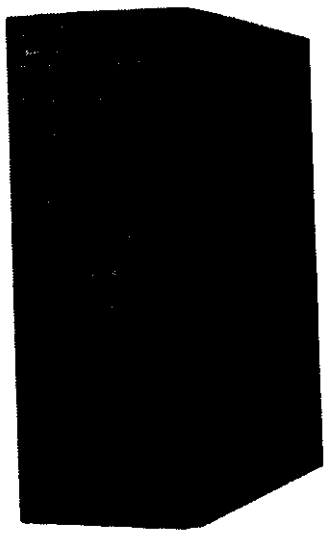


Figure 1.2 DA-951

Keep-It-Safe Features

- 3 Ultra Wide SCSI Channels
- Supports RAID Levels 0, 1, 3, and 5
- 80486 DX2-66 CPU with 16MB Buffer
- Supports Bad Sector Reassignment
- Failed HDD Data Rebuilding
- Hot Disk Standby for Automatic Data Restoration
- Hot Disk Swap capable for On-line Restoration
- 40MB/sec Ultra Wide Transfer Rate

Manual Overview

Chapter 1 "Setting Up Your DA-950/DA-951 Keep-It-Safe" is designed to get your hardware up and running as quickly and effortlessly as possible.

Chapter 2 explains the installation of the Mobile Rack in detail.

Chapter 3 explains the Redundant Power Supply; how to quickly and safely hot swap and an explanation of the indicator lights.

Note Conventions Used in this Manual

Important information is brought to your attention with two note styles. The first is as follows:

IMPORTANT:

This area would contain critical information, such as something that might cause damage to your system hardware or software.

The second type of note is as follows:

NOTE: *This style reminds you to do something or emphasizes important information.*

Audience Assumption

This manual is designed for people who are familiar with installing/uninstalling, administrating, and troubleshooting servers. For server management operation, you need to be familiar with the network operating

systems installed on your server(s), such as Microsoft Windows NT, Novel NetWare, IBM OS/2, or SCO UNIX. Knowledge of Simple Network Management Protocol (SNMP) would also be helpful.

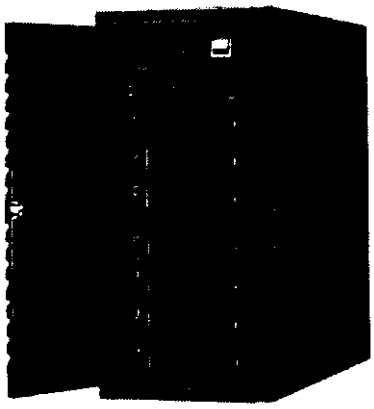
Chapter 1

SETTING UP YOUR DA-950/DA-951 KEEP-IT-SAFE

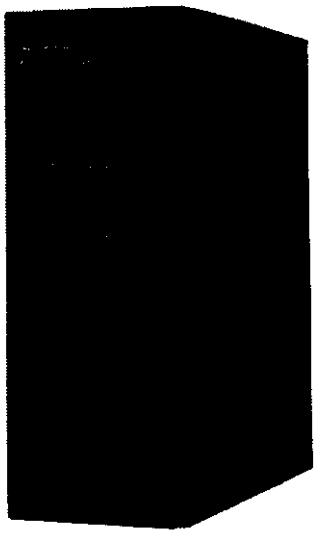
1.1 Check List

Before operating the DA-950/DA-951 disk array, please make sure that all the items listed below are present in your package:

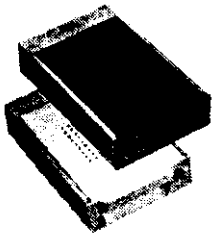
- DA-950/DA-951 Keep-It-Safe
- Two front panel keys
- Mobile Rack (Optional)
  - Mobile Rack Canister packet:
    - Two canister keys
    - Canister opener
    - Eight screws (Four for the hard drive and four are spares for the Mobile Rack)
- Two power cords
- This Manual



DA-950 Keep-It-Safe



DA-951 Keep-It-Safe



Mobile Rack

Two Canister Keys

Canister Opener

Eight Screws (Spares and HD)

Two Power Cords

1.2 Setting your Voltage Switch

On each redundant power supply is a 115V/230V switch (See Figure 1.1 "115/230V Switch"). Set this according to your country's power supply voltage. The range of the 115V setting is 90 to 135Vac; 230V is 180 to 270Vac. For example in the U.S. the voltage is 110V so it should be set at 115V.

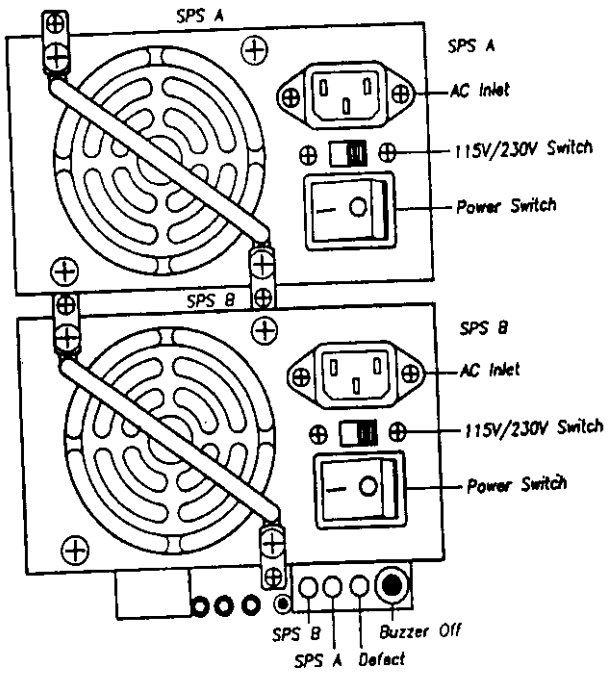


Figure 1.1 The Rear Panel View of the Redundant Power Supply

1.3 Filling your Canisters with Hard Drives

1. Open your DA-950/DA-951 front panel with the front panel keys. Inside you will see the main power switch at the top right, below that you will find the Mobile Rack canisters. These are all locked at the factory. Use the provided canister keys to open the canisters.

IMPORTANT:

Before inserting any hard drive in the canisters, find the termination jumper on your hard drive and remove the jumper so that termination is disabled. Usually your drive is factory set terminated. Please check your hard drive manual if you can not find the location of the jumper.

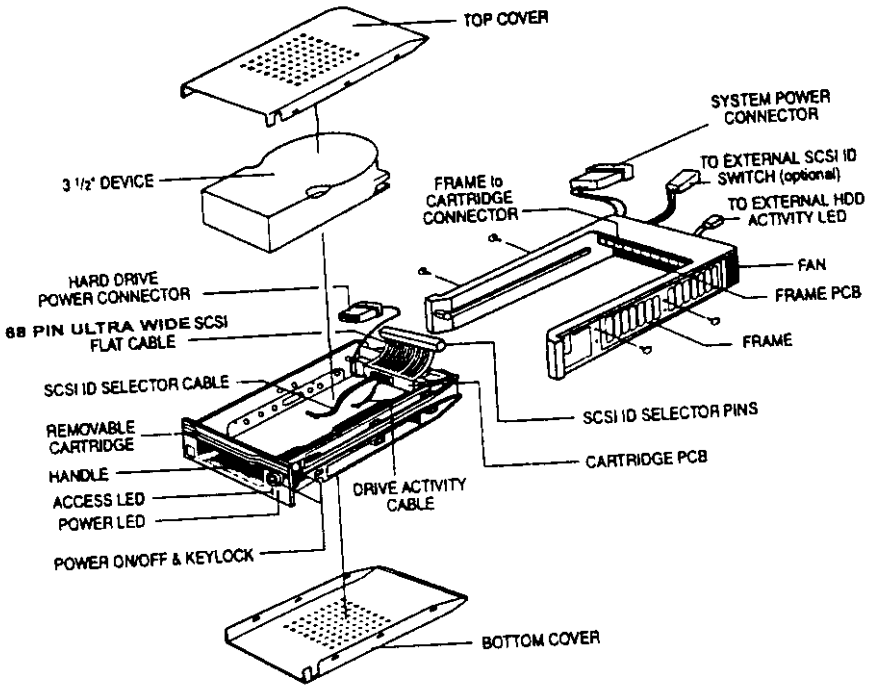


Figure 1.2 Mobile Rack Explosion of Parts

2. Pull the top canister out of the rack by giving it a light tug. See Figure 1.2 for an explosion of the Mobil Rack.
3. Open the canister using the canister opener starting at a corner and working toward the center.
4. Install the hard drive holding the canister upside down or right side up, I prefer to hold it upside down. To check which way it is, please look at the front. **The following steps assume you are holding the canister upside down.**
5. Turn your hard drive upside down, the smooth side of the drive is down, the plugs are at the top. If you are facing the rear of the drive, the power plug should be to your left.
6. Plug the power plug in first, and then the 68-pin SCSI plug.
7. Set the SCSI ID using your hard drive's external pins, see the right side of Figure 1.3 below. A typical jumper setting is shown below in Table 1.1. Look at your wires inside the canister, five wires in one group are colored, going from left to right, green, yellow, orange, red, and brown. They are

paired orange-yellow, brown-red, with green by itself. **The following is an example set up**, please see your hard drive manual for your hard drive's actual setup.

- Start with the orange-yellow lines. Put them horizontally onto the 0 and 1 pins. The yellow goes into 0 and the orange wire goes into 1.
- Next take the brown and red wires and put them vertically onto pins number 2.

8. The last one is the single green line. Put this vertically onto pin number 3, it can go either way.

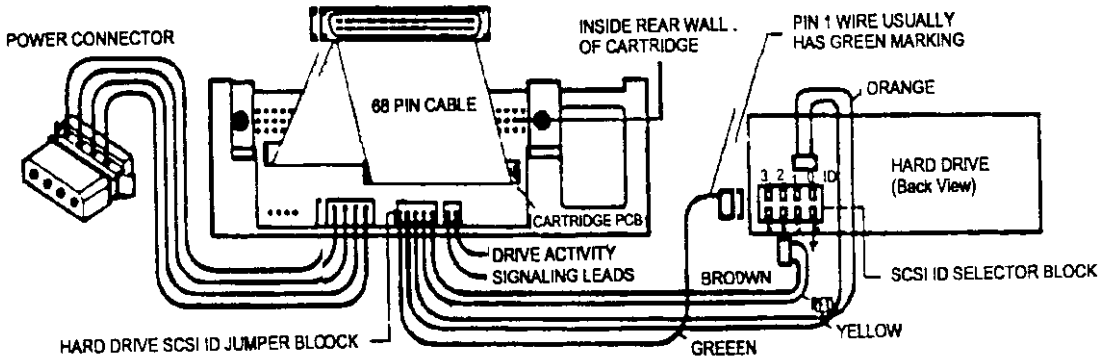


Figure 1.3 Mobile Rack Cabling Connections

9. Take the pair of brown and red wires that are not with the five wires mentioned above and plug that connector onto the LED indicator plugs on your hard drive. Check your hard drive manual for the exact location.
10. Seat the hard drive into the canister and tuck in the cables then secure it with screws provided before replacing the canister cover.
11. Set the SCSI ID using the dial at the back of the canister. See Figure 1.4 for the location of the internal ID selector.
12. Number the hot swap canisters zero, one, two and so on starting from the top. This order is important because the drive indicator lights on the front panel assume your hard drives will be numbered that way.

Table 1.1 Typical HDD SCSI ID Jumper Setting

WIDE SCSI ID	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
ID 0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
ID 1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
ID 2	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
ID 3	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1

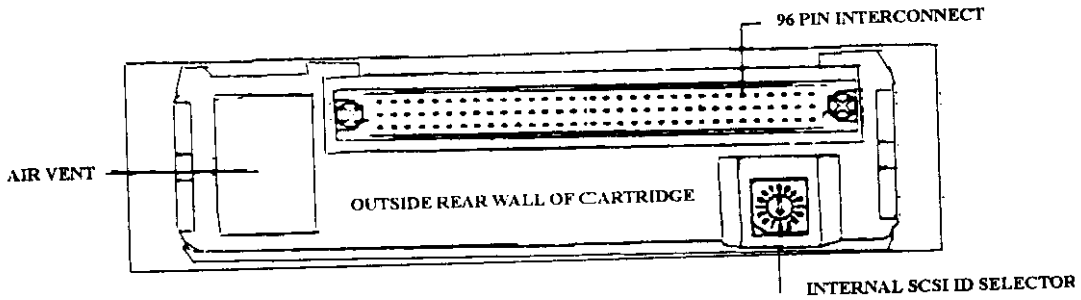


Figure 1.4 Wide SCSI Cartridge Rear View Showing the Internal ID Selector

1.4 Plug in your Cables

Now that you have inserted all your drives, plug your power cables into your two power supplies, turn your power supplies on, and then going to the front panel, turn on the main power switch. If you want to learn more about your Redundant Power Supplies, please see the chapter entitled "Redundant Power Supply".

1.5 Set the RAID Level

To set the RAID subsystem, please see the included manual called "CTL-9500 User's Manual".

Chapter 2

INSTALLING THE MOBILE RACK

The Mobile Rack features a new and improved fan/ventilation design for cooling large drives. It also has a built-in SCSI ID selector for configuring SCSI hard drives. It also features improved electronics, containing more resistors and transistors for better line signal conditioning.

The Mobile Rack consists of a frame, cartridge, and top and bottom covers. The frame can be fitted into any standard 5.25" half-height drive bay such as the one designed into standard PCs. The Mobile Rack can handle a 1" or 1.65" high 3.5" hard drive. ***By turning the key lock to the OFF position, power to the hard drive is cut off.*** Only then can it be safely removed. In the SCSI model, you have the option of setting the SCSI ID of the drive by turning a rotary switch at the back of the cartridge. Although this is an option it is the best approach because the indicator at the front of the canister will be whatever the dial is set to.

2.1 MR-126WS Mobile Rack Features

- Built-in fan for reliable operation
- Drive Activity LED
- Key lock to ensure that the drive has been turned off before it is pulled out
- Built-in SCSI ID selector
- Hot removability
- Aluminum or (optional) plastic frame

Figure 2.1 shows the front panel view of the MR-126WS. Figure 2.2 shows the rear view of the MR-126WS Frame.

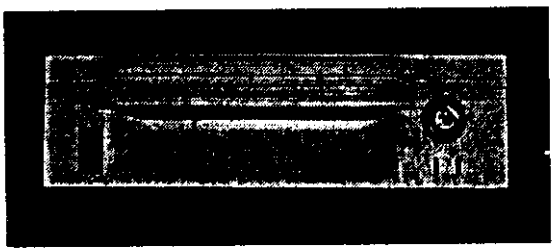


Figure 2.1 MR-126WS Front Panel View

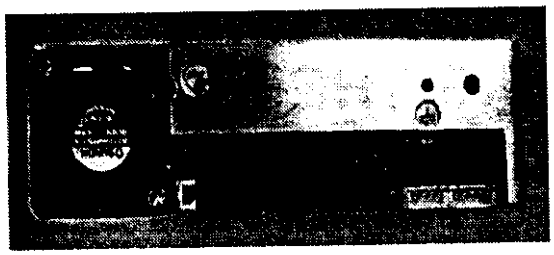


Figure 2.2 MR-126WS Frame Rear View

2.1.1 Installation and Setup

NOTE: *To prevent data loss, read this section thoroughly before installing or operating the Mobile Rack.*

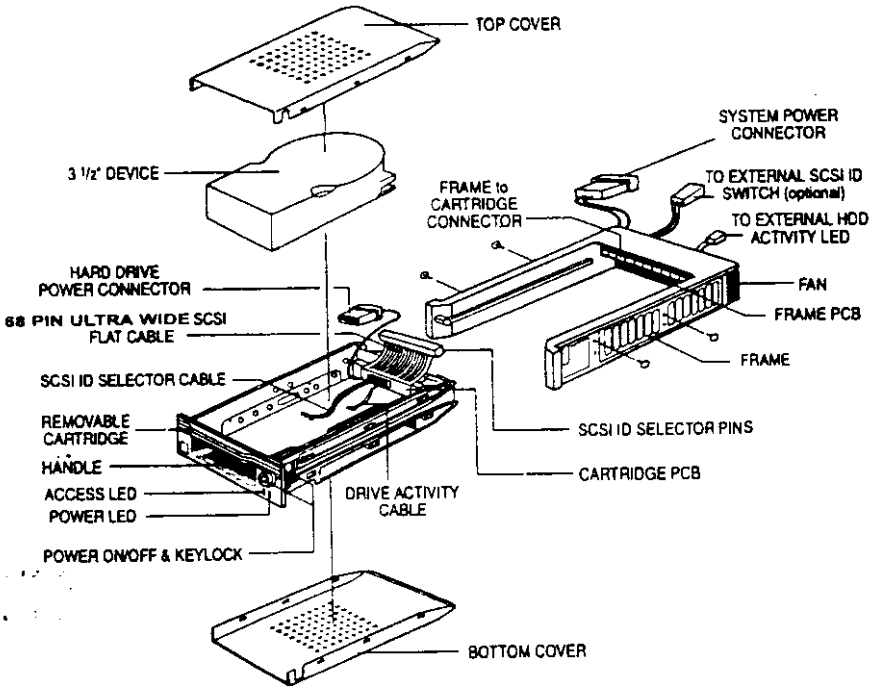


Figure 2.3 Mobile Rack Explosion of Parts

Before touching any electrical equipment, ground yourself by touching the metal part of your computer chassis. This discharges any static electricity and will prevent any damage to your computer. Have your hard drive ready. If it is a SCSI drive, please make sure you have checked the drive manual and bus terminators.

2.1.1.1 Frame Setup

To set up the frame for correct operation, please follow these steps:

- Check to make sure that you have the right model. It should have a 68-pin connector on the back of the frame.
- Make sure only the last drive in the SCSI chain is terminated.
- If it is not the last drive in the SCSI chain, be sure to remove the terminator resistor pack from the hard drive.
- If you are using an external SCSI ID selector, connect your external SCSI ID connector to the back of the frame. The external ID selector only has 4 pins because all 3 common ground pins share a single pin. Since every hard drive SCSI ID selection is different, we suggest that you test that ID selector before closing the computer case. See Figure 2.4 for the back view of the Mobile Rack frame.

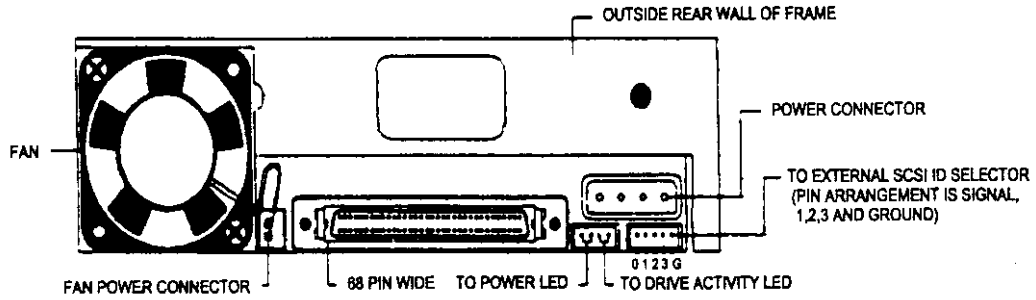


Figure 2.4 Mobile Rack Frame Back View

2.1.1.2 Cartridge Setup

Follow the steps below to install the Mobile Rack cartridge correctly:

- Open the cartridge by removing the top and bottom covers. See Figure 2.3 for an explosion of the Mobile Rack components. The metal covers snap securely into place on the cartridge without screws, but may require extra force or the use of the included canister opener to remove in some cases.
- Connect the power cable and I/O connector to the hard drive, and then place the drive inside the cartridge. Make sure that the cables are tucked into the cartridge.
- When connecting the I/O connector cable, make sure that pin 1 is aligned

correctly. Pin 1 on the cable is marked with red or other colors.

- Fasten the hard drive to the cartridge using the 4 screws provided. Do not use any screws longer than 3/8" long, as it may damage the drive.

To set up the cartridge for correct operation, please follow these steps:

- Connect the SCSI ID selector cable to the drive. The SCSI ID cable only has 5 wires to the cartridge because three common ground pins share two wires. PIN 1 of the cable is usually green or has a red marking (dot or stripe) and is connected to the ID 0 of the SCSI ID selector block on the hot side.
- Check your hard drive manual for the location and configuration of the SCSI ID jumper pins. See Table 2.1 for jumper setting.

Table 2.1 Typical HDD SCSI ID Jumper Setting

WIDE SCSI ID	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
ID 0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
ID 1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
ID 2	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
ID 3	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1

- Typical cabling configurations are shown in Figure 2.5.

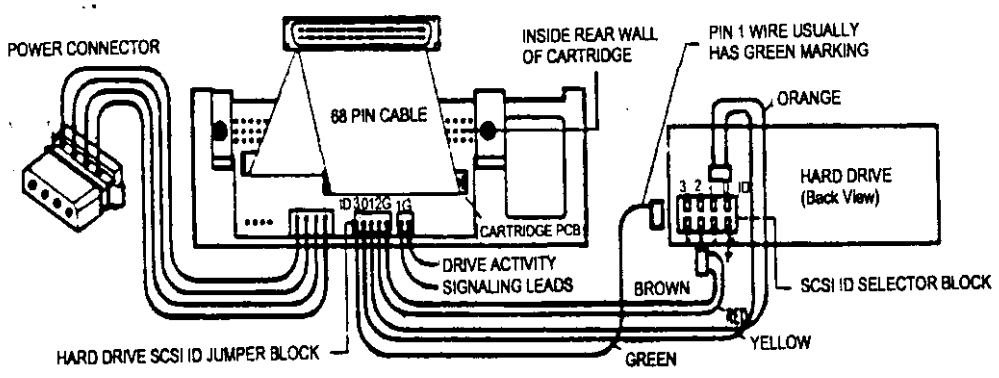


Figure 2.5 Mobile Rack Cabling Connections

- Also remove the SCSI bus terminator from the drive if it is not at the end of the SCSI chain, or if you already have a SCSI bus terminator installed on the frame.
- Figure 2.6 (below) shows the location of the internal ID selector. You

may set the hard drive SCSI ID by turning the rotary switch from 0 to F. When using an external SCSI ID selector, the internal SCSI ID selector should be set to zero.

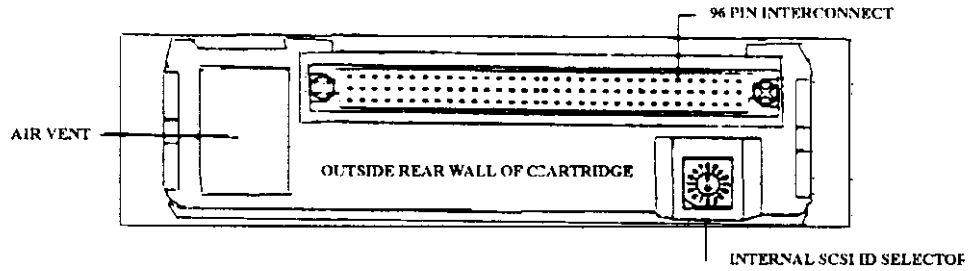


Figure 2.6 Back View of Wide SCSI Cartridge

2.1.1.3 Operation

Follow these steps before you begin using the system:

- When turning on the computer, turn the key lock to the ON position first.
- If the installation was done correctly, your system should start to operate normally.
- If you experience problems, first check all the cable connections, the jumper configuration and lastly check the SCSI cable termination.

VERY IMPORTANT:

When removing the cartridge.

- *If you need to remove the cartridge while the computer is running, observe the following precautions.*

  1. *Wait until the drive activity light has stopped indicating no read/write activity is occurring.*
  2. *Inform users not to access the drive.*
  3. *If your system uses a disk-caching program, please make sure that all the data has been written to the hard drive first.*
  4. *Turn the drive OFF by turning the key to the OFF position. The power LED will go out, indicating that the power has been cut.* ***Wait 10 seconds*** *for the drive to park the drive heads, then remove the cartridge with the drive in it.*

- *The Mobile Rack is rated for several thousand insertions; however if you*

need additional cartridges they can be ordered.

Chapter 3

REDUNDANT POWER SUPPLY

The Redundant Power Supply delivers a completely safe Switching Power Supply with hot-plug ability. In other words, it can offer a more reliable, safer, easier to install and maintain power supply for your computer system.

The Redundant Power Supply's major function is that if one power supply fails, the other will keep your system running. It provides a warning subsystem, an LED display and a buzzer alarm. When both power supplies are operating normally, it balances the power supply load share and increases reliability.

The Redundant Power Supply consists of RPC-500 Redundant Power Supply Controller and two PVR-240G-DA Switching Power Supplies. Figure 3.1 shows the rear panel of the RPS-500 and Figure 3.2 shows the front panel of the PVR-240G-DA.

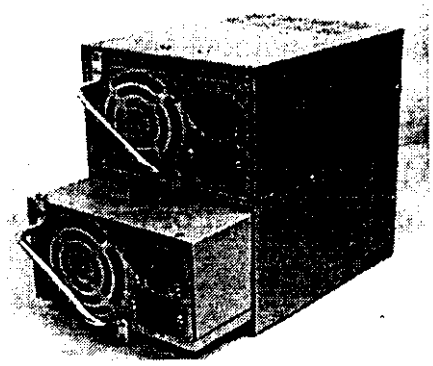


Figure 3.1 Rear Panel of the RPS-500 Including Two PVR-240G-DA Hot-Swap Boxes

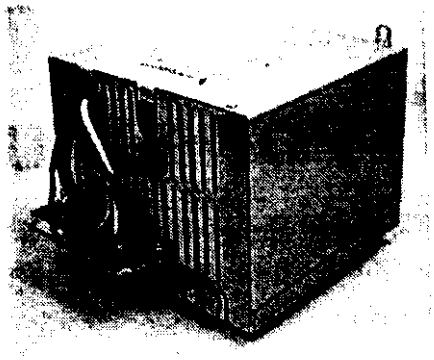


Figure 3.2 Front Panel of the PVR-240G-DA Hot-Swap Box Showing the Golden Finger Connector

3.1 Features

Redundancy

Offers redundancy for the power system and mutually backs up the output. When a failure does take place, there is a zero transfer time.

Hot-Swap Function

The power system provides a Hot-Swap function. This means that when either one of the redundant power supplies fails or breaks down, you can easily replace a failed unit without any interference to the system.

Hot-Plug Function

The power system provides a Hot-Plug function. This allows the power units in the CD Tower to be removed or inserted very easily without opening and closing the chassis.

Safety

Since the power system used in the CD Tower is all DC, it prevents a person from getting a high AC voltage shock during installation or hot swapping.

Reliability

The power unit's ON/OFF switch is controlled by the use of a very small DC current; this prevents damage to the ON/OFF switch and keeps the system from going down unexpectedly.

Compatibility

The enclosure of the power system is a standard PS/2 power supply form.

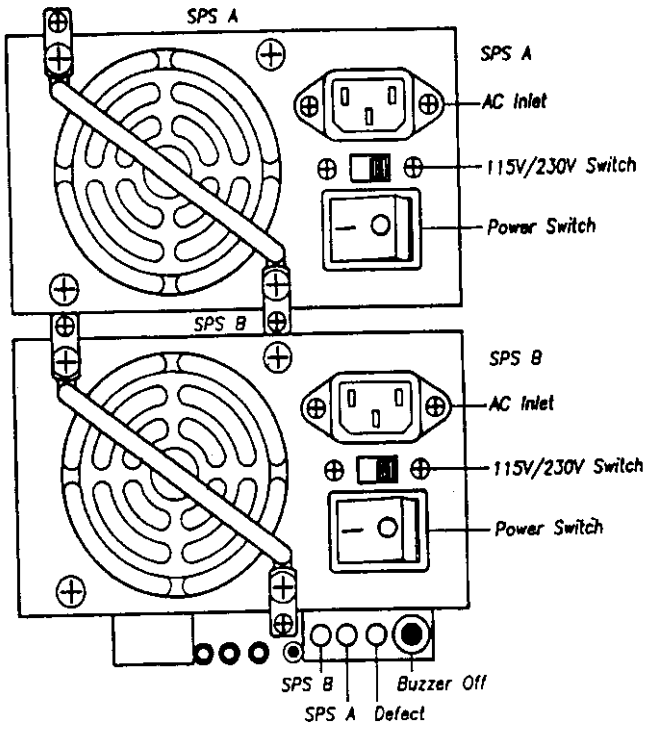


Figure 3.3 Rear Panel of RPS-500

3.2 Indicators

This section tells you about the various power supply indicator lights on the front and rear panels.

Indicator Lights

Power Supply Status Lights

The power supply has one indicator on the front panel, the rest are in the back below the power supplies, see Figure 3.3. Starting from the left, you will find two green lights.

NOTE: *The first green light on the left is for the lower power supply (SPS B) and the next one going from left to right is for the upper power supply (SPS A).*

If a power supply goes down, look at these two lights to see which power supply is not working. The third light is a red defective power light. It will flash when one of the power supplies is not functional. The same defective power light is also located on the front panel and is labeled "SPS Defect".

Turning off the SPS Defect Indicator Lights

The only way to reset these lights to an off setting is to swap the defective power supply with a functioning power supply.

Warning Buzzer

A warning buzzer will sound if either one of the power supplies fails or breaks down.

Resetting the Buzzer

Press the red button located in the rear of the your system below the power supplies and to the right of the indicator lights to reset the buzzer. It is labeled "Buzzer Off".

3.3 Setting your Voltage Switch According to Where you Live

On each redundant power supply is a 115V/230V switch (See Figure 3.3 "115/230V Switch"). Set this according to your country's power supply voltage. The range of the 115V setting is 90 to 135Vac; the range of 230V is 180 to 270Vac. So for example in the U.S. the voltage is 110V so 115V would be selected.

USER INFORMATION

INFORMATION TO THE USER
****

This device complies with part 15 of the FCC 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. Pursant 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 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 the 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.

This booklet is available from the US government Printing Office *washington, DC 20402, Stock NO. 004-000-00345-4.

CAUTION: Any changes of modifications not expressly approved by the grantee of this device could void the users authority to operate the equipment.