

User's Guide

ProRACK 8020 Series Rack Mount System



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CSS ProRACK 8020 Features

- Holds up to 9 front-loading, hot swappable 3.5 inch SCSI disk drives with trays; 1 external 5.25 inch half-height drive bay, 2 external 3.5 inch drive bays
- Available with SCSI-3
- Dual-redundant hot swappable 400 watt power supplies; Optional dual 500 watt, 750 watt or 1000 watt load sharing power supplies (not hot swappable)
- 10-fan cooling system: 4 fans for passive backplane and single board computer(s), 4 fans for disk drives and 1 fan for each power supply
- Designed for a CSS 20-slot passive backplane with single board computer(s)
- 16 gauge steel chassis, 19" wide x 14" high x 25" deep

FCC Standards

The FCC (Federal Communications Commission) restricts the amount of radiation and radio frequency emissions coming from computing equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A 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 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.

CSS Labs is not responsible for any radio or television interference caused by unauthorized modifications to this equipment. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

To ensure compliance to FCC non-interference regulations, peripherals attached to this device require shielded I/O cables.

NOTICE: The use of a non-shielded I/O cable with this device is in violation of U.S. Federal law and will not allow the device to meet the maximum emission limits.

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

NOTICE

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Section 1 - Introduction

Overview

The ProRACK 8020 Rack Mount System is a hardened industrial grade chassis which supports up to nine 3.5 inch SCSI-3 hot-swappable drives mounted in removable drive trays secured to the chassis by a standard keylock; and a 20-slot passive backplane with up to four single board computers.

The ProRACK also provides one 5.25 inch half-height drive bay and two 3.5 inch drive bays, for removable floppy drives.

The assembly is powered by 400 watt dual redundant, hot swappable power supplies. The supplies are mounted in a slide tray which is accessible at the rear of the chassis.

This unit is also available with optional dual 500 watt, 750 watt or 1000 watt load sharing power supplies. These supplies are not hot swappable.

The ProRACK 8020 is cooled by a total of ten fans. One set of four fans are mounted behind the SCSI drives. Another set of four fans are mounted on the rear of the chassis, cooling the passive backplanes, single board computers and add-in boards. Each power supply has a dedicated cooling fan.

The System Case

The 16 gauge steel chassis measures 19" wide x 14" high x 25" deep.

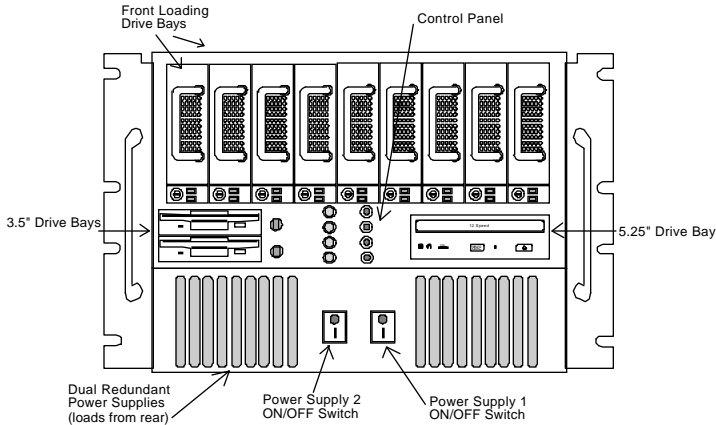


Figure 1-1: The ProRACK Front Panel

The Front Panel

The front of the chassis provides access to the following features:

- Up to nine front loading SCSI drives with tray keylocks and LEDs
- Two 3.5 inch drive bays
- One 5.25 inch drive bay
- Control panel for up to four segments of a segmented passive backplane
- ON/OFF switches for each of the dual power supplies
- Locking front door (not pictured)

Removable Drive Trays

Each drive tray is provided with a keylock and two LEDs. The keylock prevents accidental removal of the tray, and maintains the drive's connection to the power supply.

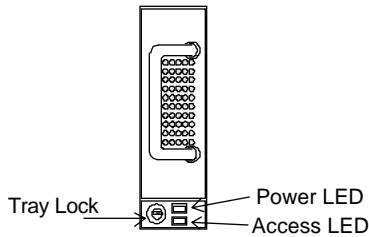


Figure 1-2: The Removable Drive

The LEDs indicate power on status and data access activity of the SCSI drive.

3.5 Inch Drive Bays

The ProRACK provides two 3.5 inch external drive bays, typically configured with floppy drives. The illustrations in this manual show a system with two removable 3.5 inch floppy drives installed. These drives are held in place with a simple thumb screw, and are easily removed.

5.25 Inch Drive Bay

A 5.25 half-height external drive bay is also provided with the chassis. The illustrations in this manual show a CD-ROM drive installed in the bay.

Control Panel

The control panel provides reset buttons and power ON/OFF switches for up to four segments of a segmented passive backplane.

Each segment of a backplane can be configured with a single board computer, creating a complete system. Depending on your particular configuration, up to four complete systems can be installed in the ProRACK 8020.

Be sure to record your ProRACK's configuration, noting which set of segment controls are assigned to which segment.

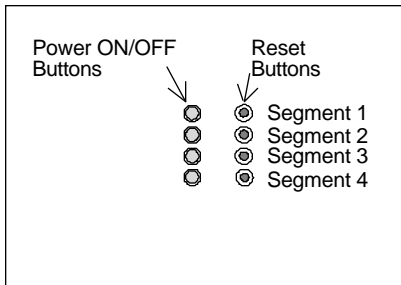


Figure 1-4: The Control Panel

The **Segment Power ON/OFF** switch controls the power to the assigned segment. The **Power LED** associate with the ON/OFF switch lets you know that the segment is receiving power from the power supply.

Each of the **Dual Power Supplies** provide separate ON/OFF switches on both the front and rear panels.

The **locking front door** limits access to the drives and control panel. A smoked glass cover allows you to view the LED indicators on the control panel.

The Rear Panel

The rear panel has these features:

- Serial port options
- Parallel port options
- Single Board Computer ports: keyboard, on-board serial
- 4-unit fan pack
- Dual power supply ON/OFF switches
- Expansion slot covers

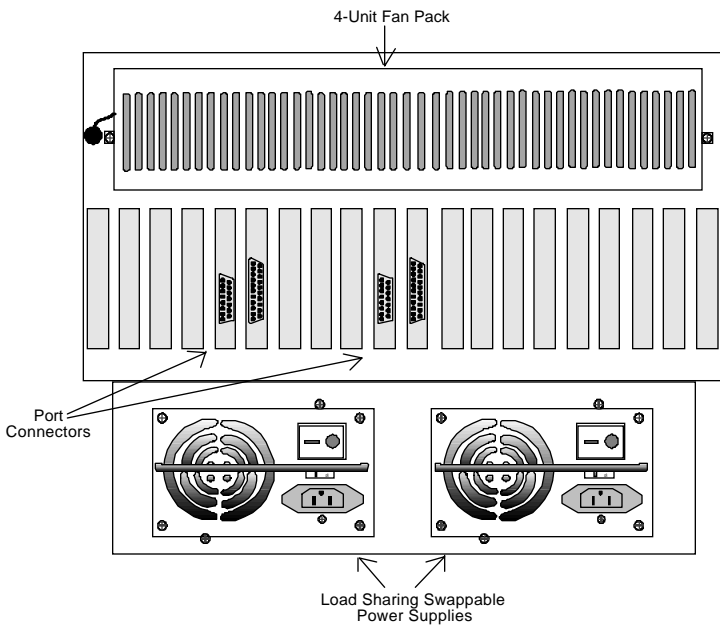


Figure 1-5: The Rear Panel

Serial and parallel port options are available on through the Single Board Computer feature slot, or through an associated feature connector slot on the rear of the chassis.

The **Single Board Computer** provides access to several features through the feature connector slot. The features can include a keyboard connector, mouse connector and parallel port connector.

The **4-unit fan pack** provides cooling for the passive backplane, Single Board Computer(s) and add-in boards installed in the chassis.

The **dual power supply** provide separate ON/OFF switches for the supplies on both the front and rear panels.

The rear panel also provides twenty **feature connector slots** for up to twenty boards.

Power Supplies

Standard Power Supplies

The 400 watt dual redundant power supplies provide enough power for a fully loaded system. Each supply is 110 VAC at 60 Hz, or 220 VAC at 50 Hz. The supplies are easily changed out.

Optional Power Supplies

The ProRACK is also available with dual load sharing 500 watt, 750 watt or 1000 watt power supplies. These are permanently mounted in the chassis, but with a little effort, can be easily easily changed out.

Section 2 - Setting Up the System

Overview

This section describes the assembly of the ProRACK System. Once everything is connected, the system will be ready to power up and put to use.

You will mount the slide rails on the system chassis and install the ProRACK in your 19" equipment rack. You will also connect the power cord(s) to the power supplies at the rear of the chassis.

Unpacking the System

Before proceeding, review this list:

- The system unit
- The slide rail assembly
- Power cord(s)

Assembling the ProRACK

Checking the Cables

Remove the top of the chassis and perform a visual check of all cabling. Make sure the SCSI cables and power connectors, add-in boards and cabling are all firmly seated. Replace the top and proceed with the installation.

If you are installing disk drives in to the chassis, refer to the instructions for installing disk drives, given in section 3 of this manual.

The Power Cord

The ProRACK comes with two insulated, grounded, three-pronged power cords, one for each supply. Plug the male end of the power cord into a grounded outlet. **CSS strongly recommends that you use a surge protective device or unit with this and all computer equipment.**

The SCSI Cabling

It is recommended that you label the drive bays, indicating SCSI strings, LUNs and segment assignments. Your arrangement of SCSI drives should be documented and available before you begin using your ProRACK system.

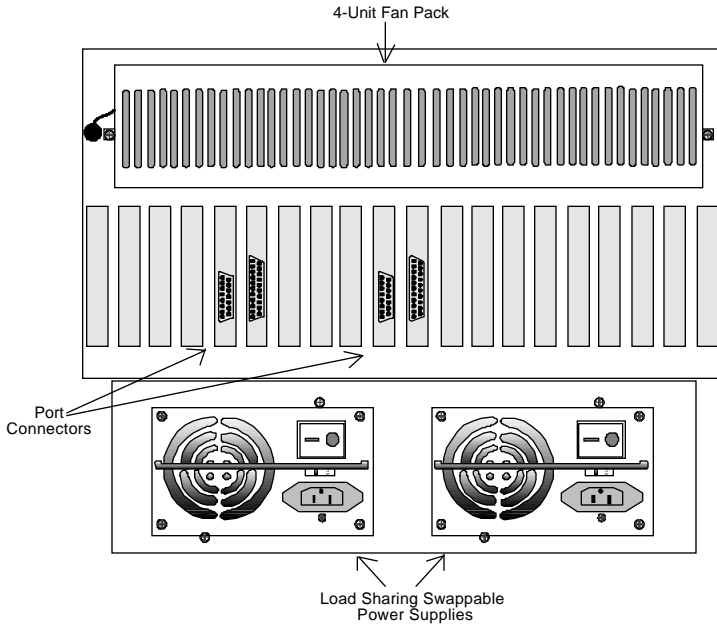


Figure 3-1: The Rear Panel

Mounting the ProRACK In Your Rack

Follow these steps to install the slide rails on the ProRACK chassis and mount the ProRACK in your equipment rack:

- 1) Slide the smallest interior portion of the slide completely out of the assembly.
- 2) Mount the smallest interior portion of the slide to the chassis, using the #6/32 screws provided.
- 3) Mount the forward bracket (smallest of the pair) to the front of the largest portion of the slide. Use two of the #10 flat head screws provided.
 - The flat head of the screw will be on the inside of the slide.
 - Put a flat head screw washer next to the bracket assembly, followed by a lock washer and a nut.
 - Adjust the bracket until it is even with, or slightly ahead of the front of the large portion of the slide.
 - Tighten the screws and nuts.
- 4) Mount the rear bracket (longest of pair) to the rear of the largest portion of the slide.
 - This bracket is an extender. You will need to match up holes that will let you mount the bracket to the rear rail.
 - Hand tighten the screws and nuts. Tighten these **after** the ProRACK is installed.
- 5) Reassemble the slides.
- 6) When you mount the ProRACK, the front of the bracket will mount to the rear of your rack's forward rail. The rear extender may be mounted in front of, or behind the rear rail. The brackets are mounted to the RETMA rails using #10 screws.

Starting Up

Follow these steps:

- 1) Power up all peripherals first, i.e. printer and monitor.
- 2) Turn the system's ON/OFF toggle to the ON position.
- 3) The system will boot, and load its operating system.

The system's BIOS is configured at the factory with default settings. You can reconfigure the BIOS at any time. Refer to your system's **Configuration Utilities** documentation.

Section 3 - Using the System

Overview

This sections describes several basic procedures:

- Installing disk drives
- Hot swapping disk drives
- Installing 3.5 inch and 5.25 inch drives (optional)
- Swapping power supplies
- Maintaining the ProRACK

Installing SCSI Disk Drives

Installing the drive involves mounting the drive in the drive tray, and making the proper connections to the drive between the outer passthru facing and the host system.

Passthru Inner Facing

The passthru inner facing is a simple circuit board mounted in the drive tray, designed to pass data, LED power and power supply to the SCSI drive from the drive's host system.

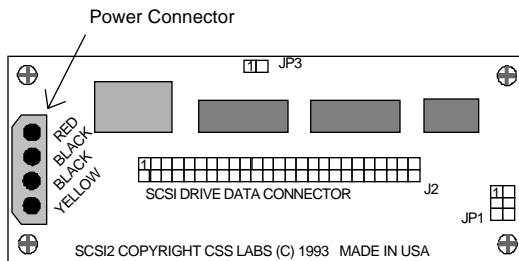


Figure 3-1: The SCSI Passthru, Inner Facing

Passthru Outer Facing

The outer facing is also a simple circuit board. It is actually mounted on the chassis, directly behind the drive bay. The board passes SCSI data to and from the host system, and LED power and the power supply from the host's power supplies.

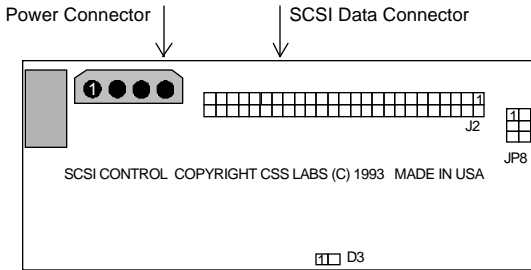


Figure 3-2: The SCSI Passthru, Outer Facing

Mounting the Drive in the Tray

- 1) Attach one end of the two-pin power cable to the LED connector on the drive, and the other end to the passthru board's LED connector, JP3.
- 2) Attach the passthru board's power cable to the power connector on the SCSI drive.
- 3) Use the short SCSI data cable to attach to the drive's data connector to the data connector, J2, on the passthru board. The red wire connects to pin 1.
- 4) Insert the drive into the tray, component side face down. Line up the drive's screw holes with those of the tray.
- 5) Attach the drive to the tray with four Phillips head screws.

Connecting the Drive to the Host System

- 1) Attach one end of the four-pinned power cable to the SCSI passthru board (outer facing). Attach the other end to the power supply. The connectors are keyed for proper insertion.
- 2) After all disk drives and trays are installed, attach the SCSI data cable(s) to the drives and the controller, in their proper sequence.
- 3) Lock the drive's keylock. The drive is ready to be formatted and used.

Installing 3.5 Inch and 5.25 Inch Drives

The procedure for installing 3.5 inch drives and 5.25 inch drives are identical, and simple to perform. All three drive bays come with platform trays which attach to the base of the drive. The platform slides into the drive bay and locks into place with a thumb screw.

- 1) Uninstall the existing 3.5 inch or 5.25 inch drive, if necessary.
 - Power down the system
 - Disengage the thumb screw and withdraw the drive from its bay
 - Disconnect all cables
 - Remove the drive from the platform tray (you will need a Phillips head screw driver) and set the drive aside
- 2) Install the new drive on the platform tray.
- 3) Slide the platform tray and drive into the drive bay.
- 4) Secure the drive to the chassis with the thumb screw.

Using The Power Supplies

The power supplies are mounted in a large slide tray on the bottom of the chassis, and are accessible from the rear panel.

The ProRACK is available with dual load sharing 400 watt, or 500 watt, 750 watt, or 1000 watt power supplies.

The 400 watt power supplies are attached to the sliding tray's rear panel. The 500 watt, 750 watt and 1000 watt supplies are attached to the bottom of the tray.

Changing Out Power Supplies

Follow these steps to change out a power supply:

- 1) Working from the rear of the chassis, power down and unplug the power supply to be changed out.
- 2) Slide the power supply tray from the chassis, to expose the power supply.
- 3) Disconnect all power supply cables.
- 4) Remove the screws securing the power supply to the sliding tray and set them aside. On the 400 watt power supply, these are located on the rear panel. On 500 watt, 750 watt, and 1000 watt power supplies, these are located on the bottom of the tray.
- 5) Lift the power supply out of the tray and set it aside.
- 6) Insert the new power supply into the tray, and secure it to the tray with the screws you removed in step 4.
- 7) Reconnect all power supply cables.

- 8) Slide the power supply back into the chassis. You are now ready power up the supply.

Setting 110 or 220 VAC

The power supply may be configured to operate with either 110 VAC or 220 VAC. Simply locate the red selector switch on the back of the system case.

The switch is clearly marked and displays the setting you have selected.

Standard Maintenance

Follow these guidelines in maintaining the ProRACK System.

- Do not eat, drink or smoke near the computer.
- Use a surge protector with your system and any peripheral devices. Surges of power can destroy computer components and can also destroy data on an entire hard drive.
- Do not allow any magnetic sources to come near the machine, such as magnets or electric motors. These will damage data on your disks.
- Do not let the computer share an electrical circuit with a noisy electric motor, such as a blender or a vacuum cleaner.
- Ground yourself before touching any exposed circuitry by touching the system case. This discharges static electricity in your body, which can damage delicate components.

If one or more of the fans installed in the ProRACK fail, please contact your nearest CSS Support personnel.