
CPS 4200 Controller/Power Supply

Instruction Manual

**Revision C
March 2001**

Warranty Summary*

This Harmonic Lightwaves product is warranted against defects in material and workmanship for thirty-six (36) months from the date of shipment. Harmonic Lightwaves will, at its option, either repair or replace products that prove to be defective.

For warranty or repair, return this product to a service facility designated by Harmonic Lightwaves. Buyer shall prepay shipping charges to Harmonic Lightwaves, and Harmonic Lightwaves shall pay shipping to return the product to the Buyer. However, Buyer shall pay all shipping charges, duties and taxes for products returned to Harmonic Lightwaves from another country.

Harmonic Lightwaves warrants that its software, as well as firmware designated by Harmonic Lightwaves for use with the product, will execute its programming instructions when installed properly. Harmonic Lightwaves does not warrant that the operation for the product or software or firmware will be uninterrupted or error-free.

Limitations of Warranty

The foregoing warranty shall not apply to defects resulting from abuse, neglect by Buyer, improper installation or application by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site penetration or maintenance.

Note: No other warranty is expressed or implied. Harmonic Lightwaves specifically disclaims the implied warranties or merchantability and fitness for a particular purpose.

Exclusive Remedies

The remedies provided herein are the Buyer's sole and exclusive remedies. Harmonic Lightwaves shall not be liable for any direct, indirect, special, incidental or consequential damages, whether based upon contract, tort or any other legal theory.

Assistance

For assistance, contact your nearest Harmonic Lightwaves sales office.

Harmonic Lightwaves, Inc.
549 Baltic Way
Sunnyvale, CA 94089
Tel: 408/542-2500
Toll-free: 800/730-4099
Fax: 408/542-2511

Part Number: 700-0005066-1

Revision: C- March 2001

* See Order Acknowledgment for complete warranty details.

ATTENTION

ACHTUNG

FCC (for USA only): Federal Communications Commission Radio Frequency Interference Statement. Warning: This equipment has been tested and found to comply with Part 15 of the FCC rules.

Notice for Canada: This device meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CAUTION: There are no user serviceable parts inside, refer all servicing to qualified service personnel. Other than those specific measurements, adjustments and tests specified in this manual, make NO attempt to modify or alter any circuit or assembly in any manner.

ATTENTION: Toute intervention sur cet équipement est formellement déconseillée par le fabricant. En dehors des réglages décrits dans le manuel, l'utilisateur doit contacter une personne qualifiée par le fabricant pour toute modification ou réparation.

Vorsicht: Es sind keine zu wartende Teile im Gerät, alle Wartungsarbeiten nur von qualifiziertem Personal ausführen lassen. Es dürfen nur die im Handbuch spezifisch aufgeführten Messungen, Justierungen und Tests vom Benutzer vorgenommen werden. Unter keinen Umständen, dürfen Modifikationen oder Änderungen jeglicher Art am Gerät unternommen werden.

710-0000006 Rev. B

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Chapter 1

Introduction

About this Manual

This instruction manual is a complete guide to installing and operating the CPS 4200 Controller/Power Supply module. Please read the entire manual before beginning installation or operation.

Product Description

The CPS 4200 Controller/Power Supply plug-in module is used with the HLP 4200 equipment platform. The module houses two independent boards: a power supply and a controller. The power supply board transforms 100-240 VAC input to +24 VDC. It can provide primary powering for a single HLP 4200 platform fully loaded with modules.

The controller board provides the logic to operate the HLP 4200 platform controls and the front panel display for the HLP 4200WD (with display). It also enables local and remote communications for system monitoring and control. Because the controller draws power from a separate bus (see Figure 2), the controller will continue to work even if the power supply board fails, provided that any one source of +24 VDC remains active.

The CPS 4200 can be used to provide redundancy powering. Two CPS 4200 modules can be mounted in one HLP 4200 platform to provide redundancy at the module level.

The CPS 4200 can also be "hot plugged" into a running system.

The CPS 4200 provides an internal fault diagnostic menu that can be read on the HLP 4200 display, or remotely by means of the Harmonic Lightwaves NETWatch™ Element Management System.

Product Application

The CPS 4200 Controller/Power Supply is used with the HLP 4200 platform. The platform is designed to meet the economic and technical requirements of broadband service providers. The modular design of the platform offers the user a number of advantages:

- The flexibility to add other plug-in modules as industry requirements change, without the need to replace equipment shelves, power supplies or status monitoring equipment.
- The economic advantage of maintaining spare plug-in modules rather than entire subsystems.
- Reduced network downtime because of plug-in module replacements.

Technical Specifications

Electrical

Power Requirements: 100-240 VAC, 50/60 Hz

Output voltage: $24.8 \pm .3$ V

Output current: 11 Amps max.

Efficiency: 80% minimum at full load

Fuse value: 5 Amps, 250 V

Displays

Front panel LED: "STATUS" bi-state LED, Alarm = Red, Normal = Green
"SELECT" Yellow LED on when HLP 4200 is accessing module

Regulatory Compliance

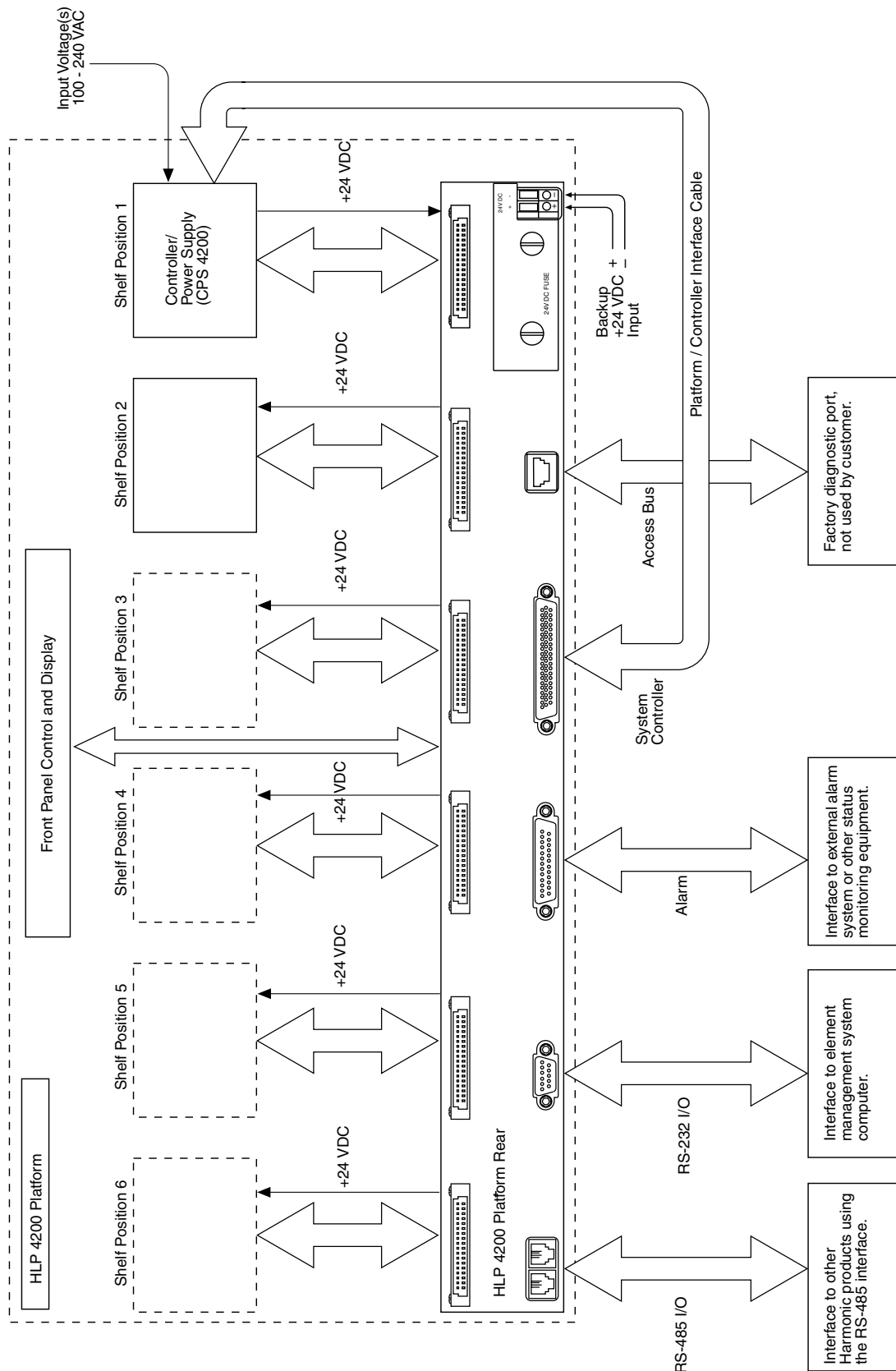
CSA NRTL/C, TUV, IEC 950, CE

System and Block Diagrams

Figure 1. Functional Diagram of HLP 4200 Rear Panel

Figure 2. CPS 4200 Controller/Power Supply Block Diagram

Figure 3. CPS 4200 Front and Rear Panel Features



HLW9-309-604A

Figure 1 – Functional Diagram of HLP 4200 Rear Panel

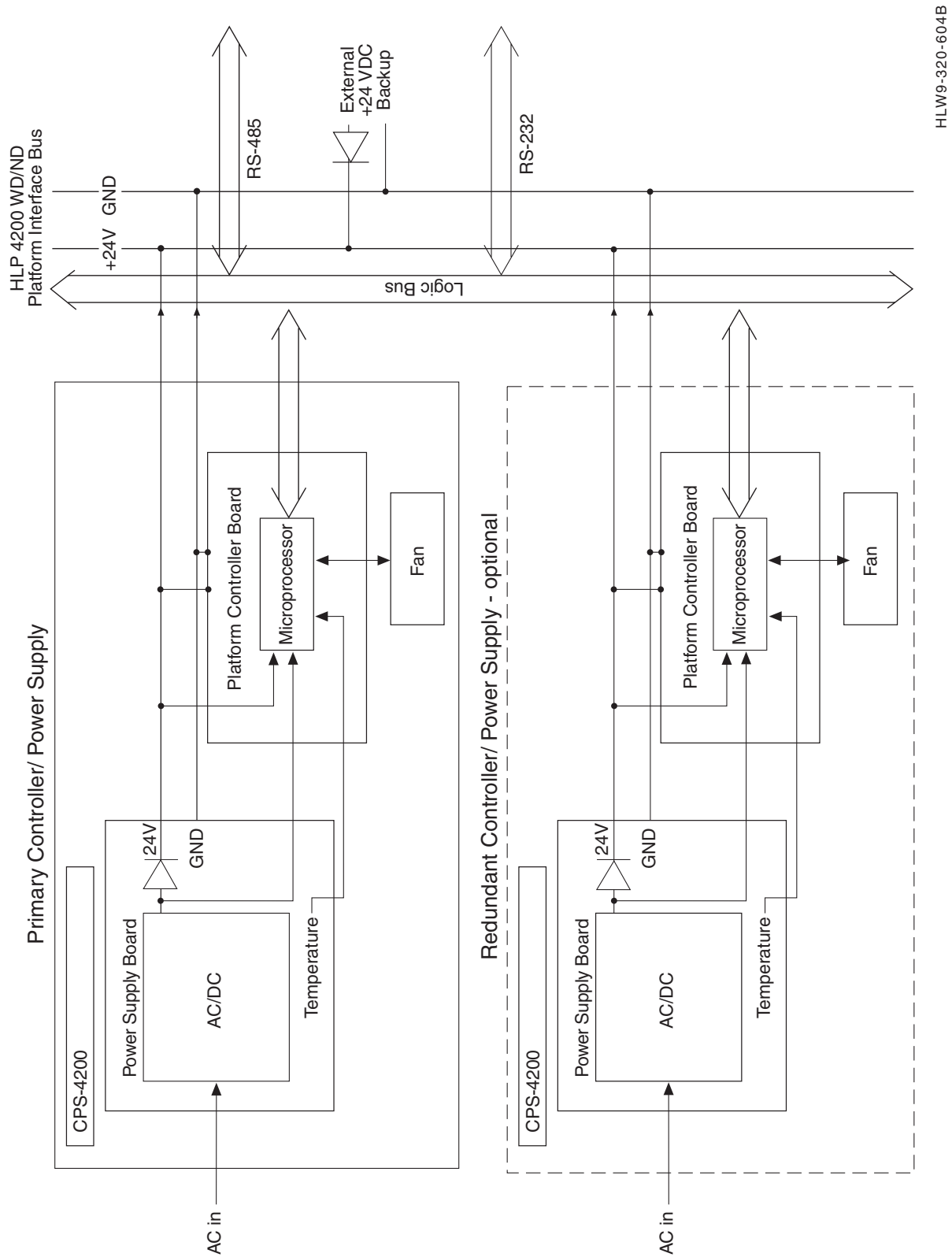
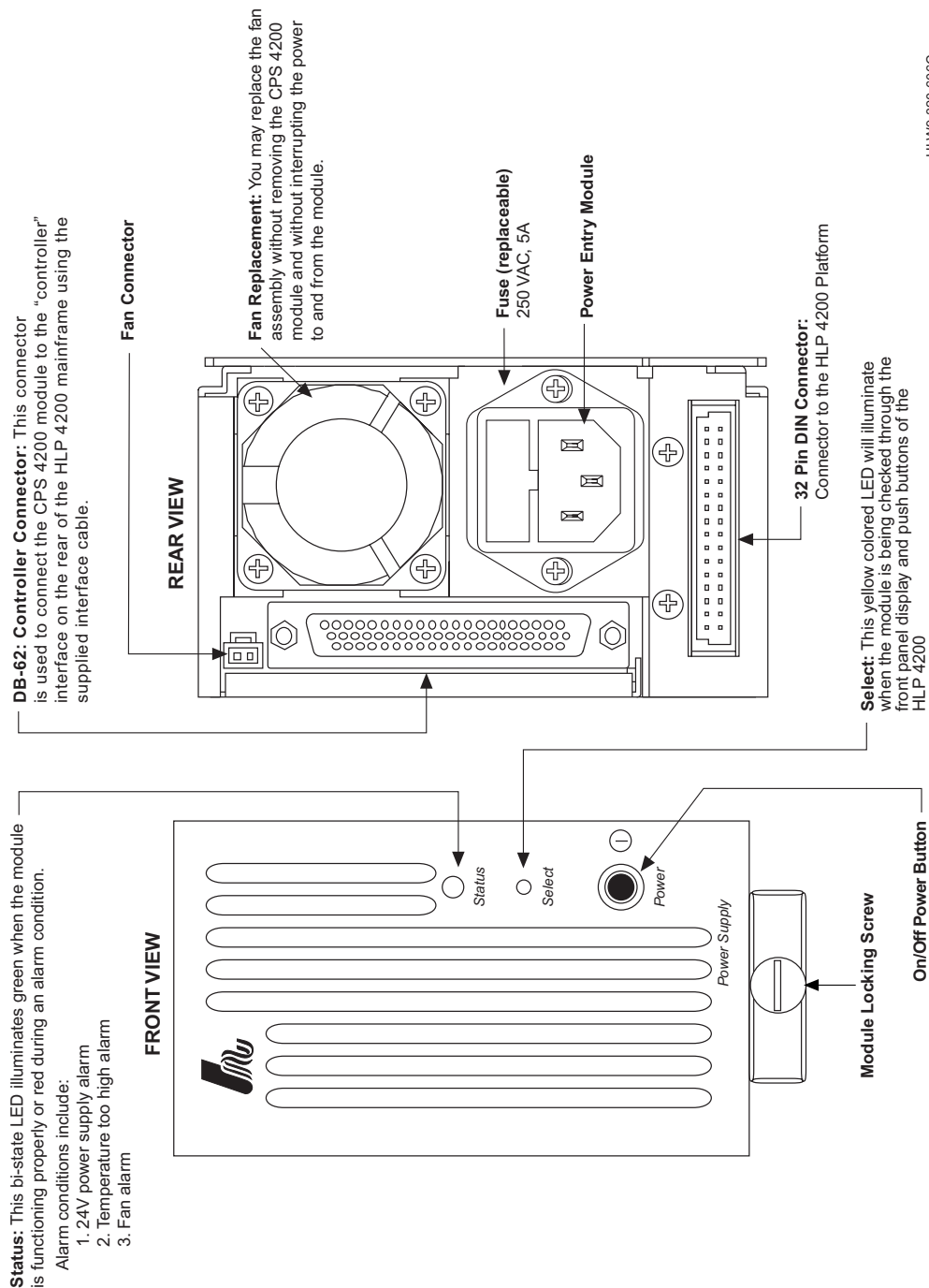


Figure 2 – CPS 4200 Controller/Power Supply Block Diagram



HLW9-320-606C

Figure 3 – CPS 4200 Front and Rear Panel Features



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Chapter 2

Installation

Installation

Receiving and Inspection

As you unpack your unit, inspect the shipping container and equipment for damage. Save the shipping material for future use.

If the container or the equipment is damaged, notify both the freight carrier and Harmonic Lightwaves (800/730-4099). To protect the operator from potential injury, and to protect the equipment from further damage, do not perform any operational tests.

Mounting the Unit in the HLP 4200

CAUTION The CPS 4200 Controller/Power Supply should not be used with the HLP 4000 platform. Doing so could damage the back plane power bus of the HLP 4000 platform due to possible current overload.

The CPS 4200 is a plug-in module which is easily inserted into any desired shelf position in the HLP 4200 platform. Typically, it is placed in slot #1.

For the HLP 4200WD (with display panel):

Lower the control/display panel and slide the module into any available slot.

For the HLP 4200ND (without display panel):

Slid the module into any available slot.

Once the module is seated, lock the unit into position with the locking screw shown in Figure 3.

Power Requirements

The CPS 4200 accepts a universal AC power source of 100-240 VAC at 50/60 Hz. Connect the supplied power cord to the AC input socket on the rear of the CPS 4200.

AC Fuse Replacement

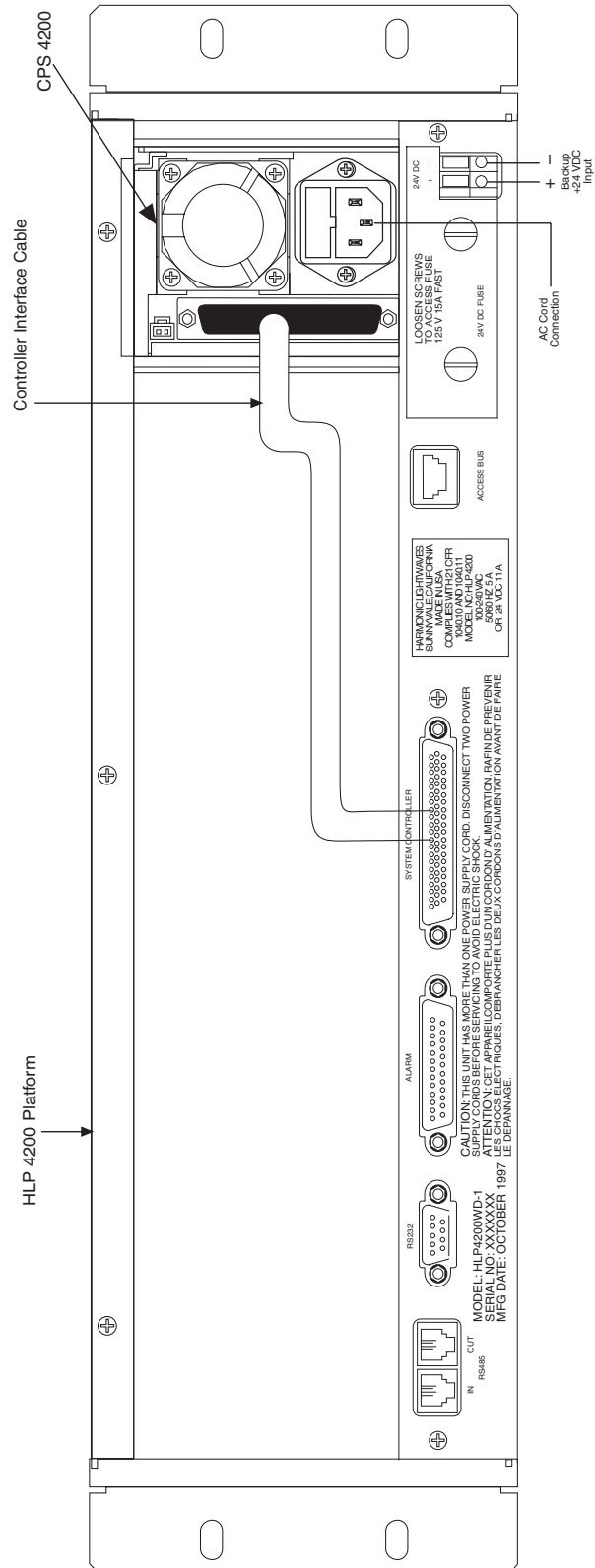
The AC input to the platform is protected by a 5 A, 250 V, fast, high interrupt current fuse, covered and latched in place as part of the power entry module. The power entry module is located at the rear of the CPS 4200 module, next to the AC plug.

Installing the Controller Cable

The CPS 4200 accepts a universal AC power source of 100-240 VAC at 50/60 Hz. Connect the controller cable between the CPS 4200 and the HLP 4200 platform as shown in Figure 4.

Redundancy Options

- A. To achieve power supply redundancy at the CPS 4200 module level, you can mount two CPS 4200s in the HLP 4200 platform. In this arrangement, the power supplies will operate in an auto parallel mode. Only the unit connected via the controller cable acts as the platform controller (bus master). You do not have to shut off the system to add or remove the second CPS 4200.
- B. The HLP 4200 can also be powered by an external 24 VDC power supply. This capability provides an additional redundancy option. See the HLP 4200 instruction manual for further information on using this input. Figure 2 shows the CPS 4200 in a redundancy configuration. In this configuration, if the main power supply fails, the main platform controller continues to operate, drawing power from the redundantly powered platform bus. If you remove the main CPS 4200 unit from the platform, turn off all power, transfer control to the redundant CPS 4200 module by disconnecting the controller cable from the main CPS 4200 unit (see Figure 4), and reconnecting it to the redundant CPS 4200. Restore power.



HLW9-320-602

Figure 4 – HLP 4200 Rear Panel



Chapter 3

Operation

Operation

Follow these steps to verify that the CPS 4200 is operating properly:

1. Press the power button on the CPS 4200. The HLP 4200 display will show "SYSTEM READY."
2. Press any key on the HLP 4200 front panel. The display will show "MODULE SELECTION."
3. The Element Management System (EMS) address can now be set. The address is used by the element management software to uniquely identify the platform controlled by the power supply.

The address can be any number between 1 and 2047.

Press the Up/Down Arrow key once. The display will show "ADDRESS: XXX <ENTER> TO CHANGE."

To set the address number, hold down the "SET" button while pressing the Up/Down Arrow key until the desired address number is displayed.

Press the "ENTER" key to set the address or the "ESC" key to cancel.

4. Use the Up/Down Arrow key or "ESC" key to return to the "MODULE SELECTION" menu and press "ENTER."

The display will show which modules are plugged into the shelf.

For example, the display will show:

"POSITION 1: CPS 4200 P. SUPPLY BUS MASTER"

This means that a CPS 4200 Controller/Power Supply occupies slot 1. The "BUS MASTER" indicates that the controller circuitry of this slot (slot 1) power supply is controlling the mainframe.

If other modules are installed, the user can use the Up/Down Arrow keys to scroll through the module list. For additional information on a particular module, press the "ENTER" key to display a module menu. Note that in the "MODULE SELECTION" submenu, the display will highlight first any module is in alarm.

Figure 5 is a flow chart of the entire HLP 4200WD menu. Figure 6 shows the CPS 4200 module menu.

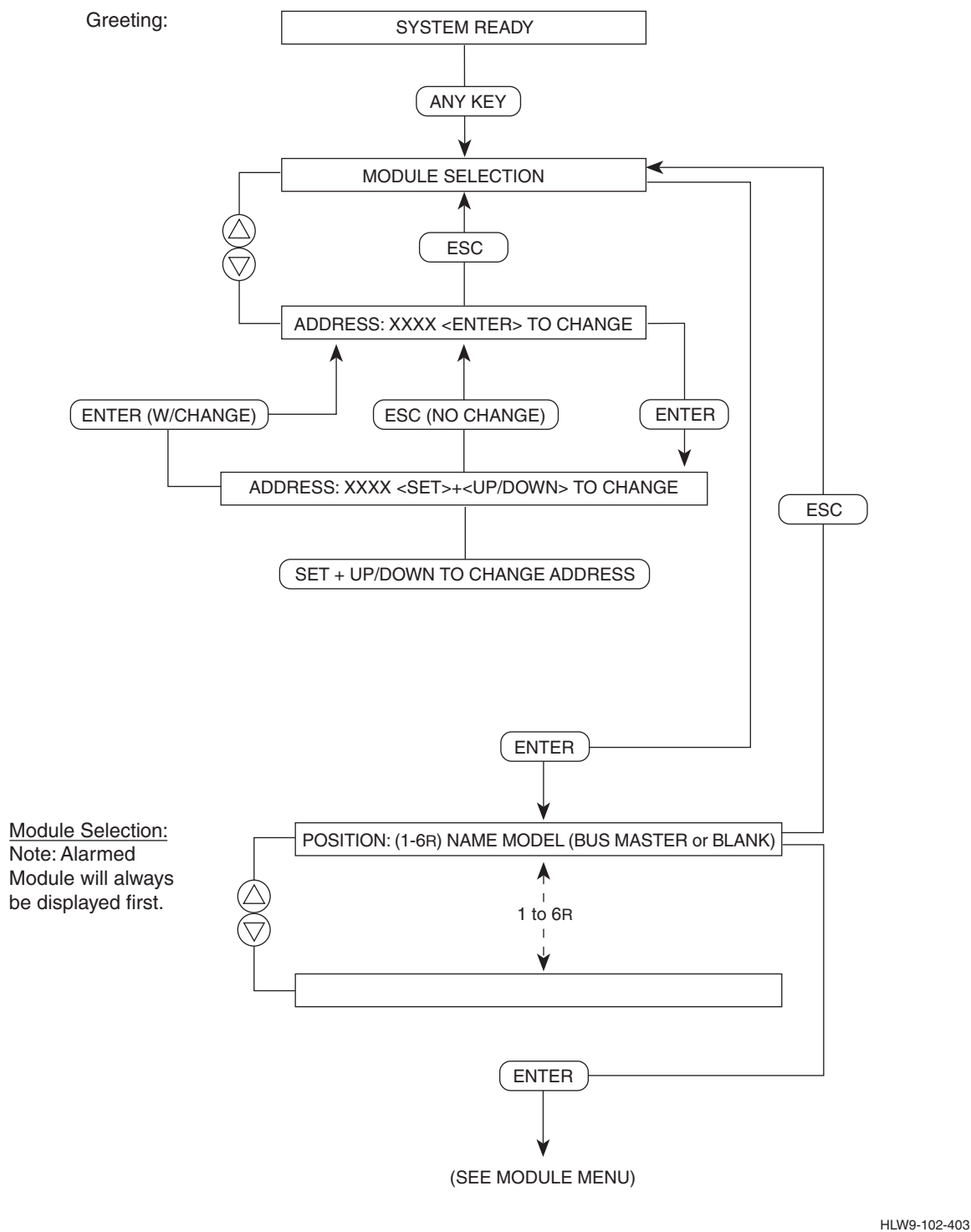


Figure 5 – HLP 4200 Menu Display

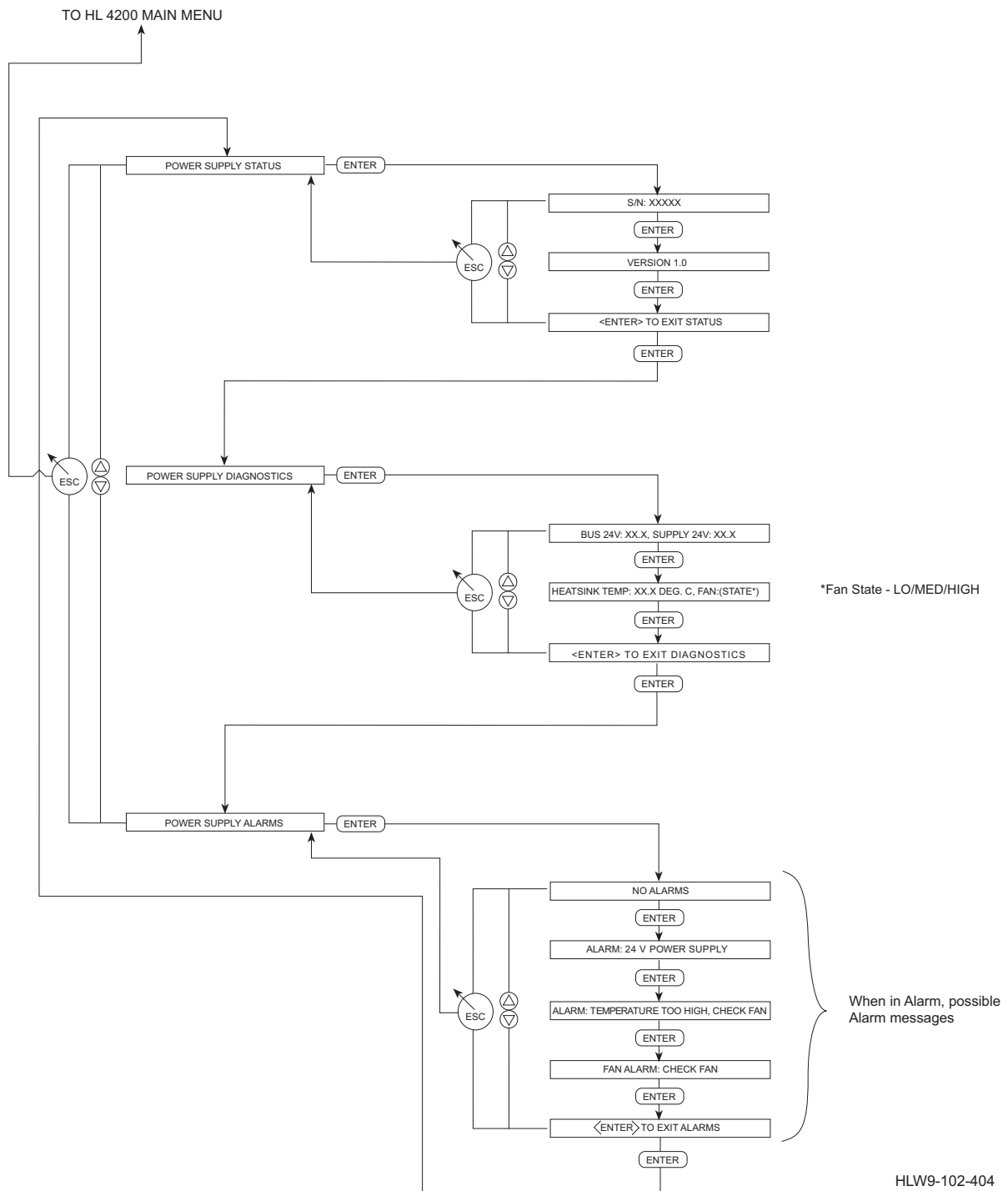


Figure 6 – CPS 4200 Power Supply Menu Display



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Chapter 4

Maintenance

In Case of Problems

Should a problem occur with your unit, check the following:

1. Confirm that the CPS 4200 is receiving power.
2. Confirm that the controller cable is connected to the the CPS 4200 and the HLP 4200.

If a problem still persists, contact Harmonic Lightwaves Customer Service at (800) 730-4099. A service technician will assist you in determining whether a fault exists with the unit.

If the service technician determines that you need to return the unit, he or she will issue you a Returned Material Authorization Number. Please make note of this number. You will need to include it on the shipping container when returning the unit, and with all correspondence regarding the unit.

The return address is:

Harmonic Lightwaves, Inc.
549 Baltic Way
Sunnyvale, CA 94089
Attn: Customer Service
RMA no. _____

