Film-Tech

Dolby®

Load500
Communication Software
for the CP500
Cinema Processor

Issue 2   Part No. 91495

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Chapter 1
Introduction

Load500 Version 2 is a Microsoft Windows-based program used to transfer alignment and format information between the Dolby® CP500 Cinema Processor and a computer. The program includes a special option that allows CP500 operating system software to be updated easily. Earlier versions of this program were DOS-based.

This manual is intended to be a guide for anyone installing and maintaining Dolby CP500 Cinema Processors.

1.1   System Requirements

The Load500 program requires the following minimum configuration:

- A PC running the Windows 95, 98, ME, NT, 2000, or XP operating system, with a serial (RS-232) I/O port.
- A shielded serial data cable, 9-pin male D-connector to 9-pin female D-connector, with straight-through connections.

Note: If non-recoverable errors occur during the CP500 software upgrade process, it may become necessary to replace two flash ROM ICs inside the CP500. We recommend that you have spares on hand in the unlikely event that you will need them. They are available as Dolby Part Numbers 84164 and 84165.

1.2   Program Installation

The Load500 program is supplied as a self-running .exe file. It is available via the normal Dolby cinema distribution methods or by contacting your dealer.

Copy the program Load500v2.exe to your hard disk.

1.3   Connecting the PC and Setting up the CP500

Connect the serial cable between the PC's serial data port and the CP500 rear-panel connector labeled Serial Data. Follow these steps on the CP500:

Press **Menu**

Press **System Setup** (SK1)

Press **CP500 Controls** (SK1)

Press Data Transfer (SK2)

Select **Connect to Load500** then press **OK.**
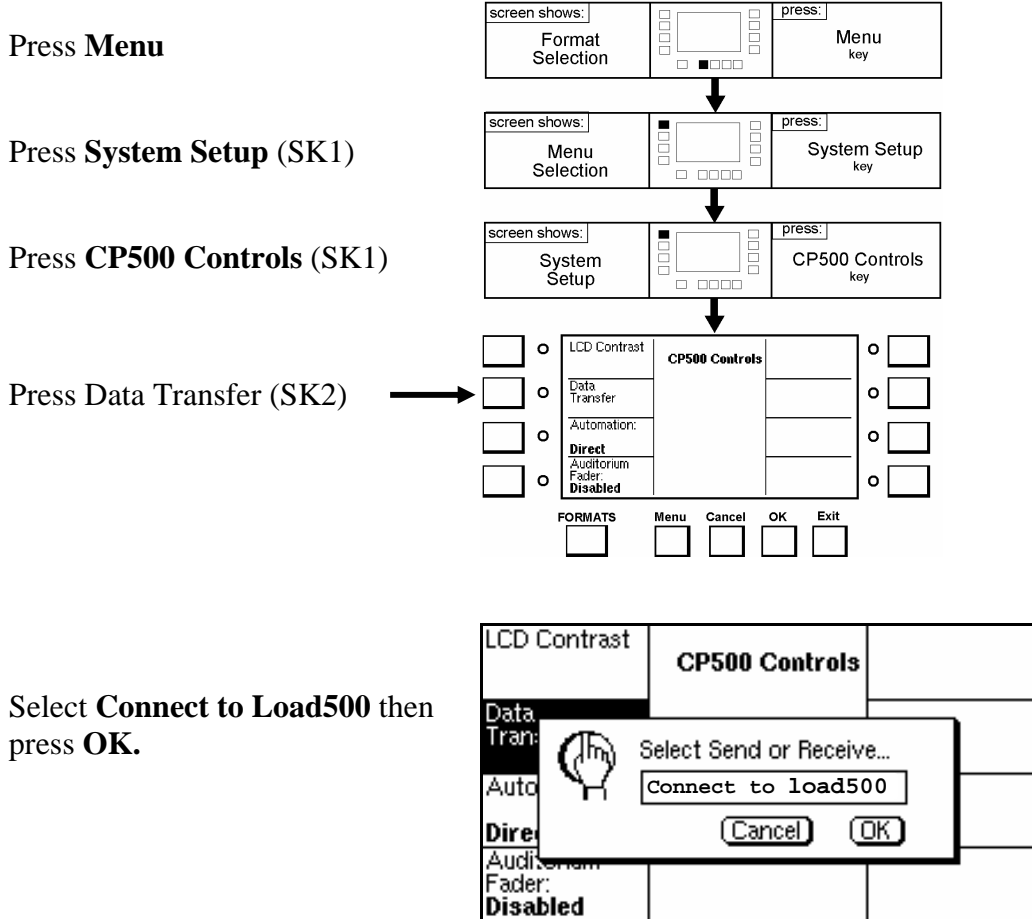
Figure 1-1 CP500 Setup

Chapter 2
Operation

2.1   Running Load500

From the folder where you saved the program file, double-click to run it. If you wish to run the program with an adjustable window size instead of the fixed default size, you must first open a command prompt or DOS prompt window by clicking Start, Run, typing **cmd**, then pressing **Enter**. Adjust the window size as desired then type the path to the Load500 program to run it.
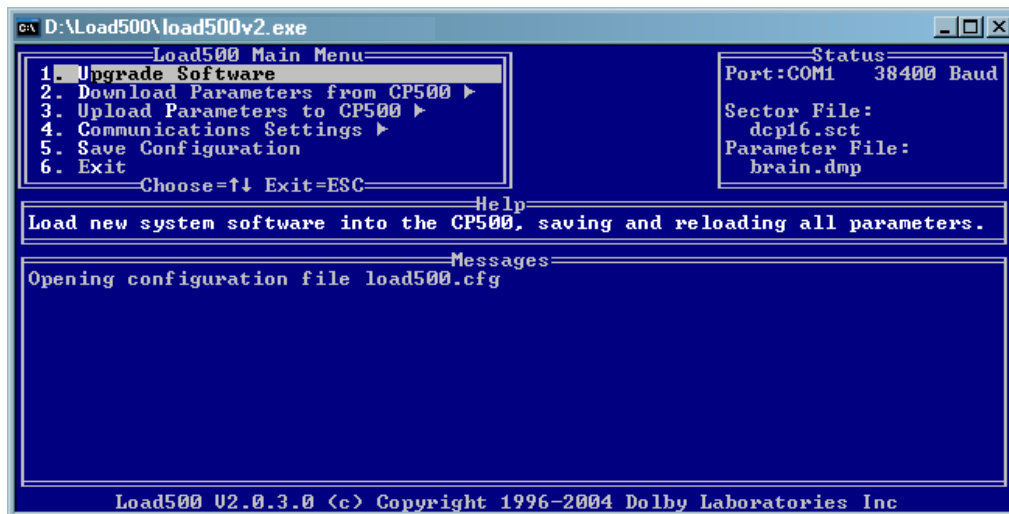
Figure 2-1 Opening Screen

The version number of the Load500 program you are running is displayed on the bottom of the window. The blue background signifies that you are not running the earlier DOS version of the program.

Load500 is completely keyboard driven. A pointing device such as a mouse or trackball is not supported. The program is based on pop-out and drop-down menus. Moving around in these menus is accomplished by using the following keys:

Enter, **Esc** (Escape), and the arrow keys ↑, →, ←, and ↓
Any bold letter in the item title (such as the **U** in Upgrade Software), or the item number, can be typed as a shortcut to get to that item faster than using the arrow keys. For example, rather than pressing the ↓ key to get from the **1. Upgrade Software** item to the **5. Save Configuration** item, the **s** key (always lower case only) or the number **5** can be typed.

Select a highlighted menu item by pressing the **Enter** key. Pressing the **Esc** key leaves the current menu.

2.2 Screen Layout

The screen is made up of several sections, only one of which is used for navigating through the software.
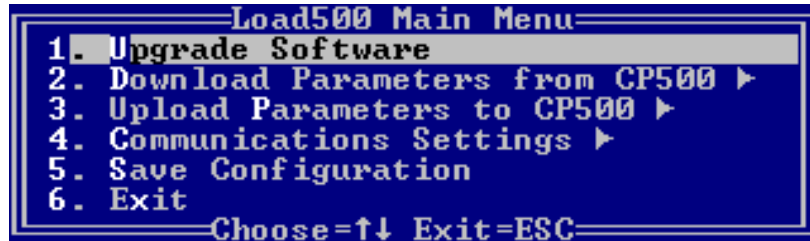
Figure 2-2 Main Menu Choices

The area in the top left of the screen called **Load500 Main Menu** lists the available menu options. The six options can be highlighted with the up ↑ or down ↓ arrow key and selected using the right → arrow key or the enter key. Typing the appropriate lower case letter or the item number also allows immediate selection of each option.
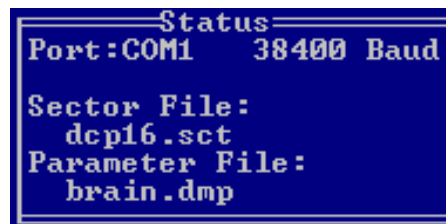
Figure 2-3 Status Section

The top right area of the screen labeled **Status** shows the communication status of the software and the names of the files in use. The default name for the file containing CP500 operating software to be loaded is **dcp16.sct**. The default name for the file used to store the CP500 parameters when downloaded from the CP500 to your hard disk is **brain.dmp**.
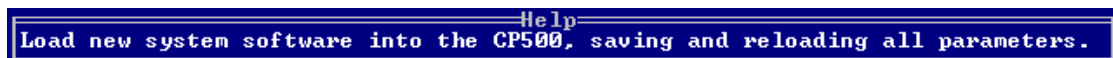
Figure 2-4 Help Section

The middle section of the screen labeled **Help** provides a description of the selected menu item.
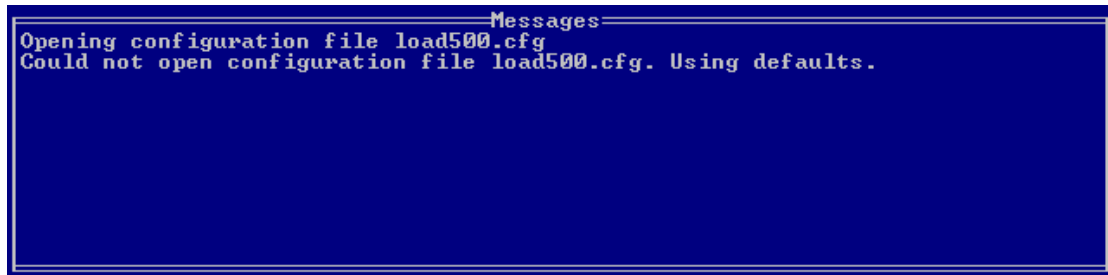
Figure 2-5 Messages Section

The large lower portion of the screen labeled **Messages** provides information on the operation of the software. In the example shown, the Load500 program has been started and has searched for a previously stored CP500 configuration file. A Load500 configuration file was not stored, therefore the program is using its default settings (as shown in Figure 2-3).

2.3   Initial Settings—Setting up the Program Configuration

When Load500 is first run, a program configuration file will not be found. The program will use the default settings shown in the status box.

2.3.1   Set COM Port and Baud Rate

Begin by selecting menu item 4, **Communications Settings**, to set the PC's serial communication port number and baud rate. This can be done by moving the highlight bar using the up ↑ or down ↓ arrow key and pressing **Enter**, or by pressing the letter **c** (lower case), or by pressing the number **4** on the keyboard. This will open the **Comms Settings** menu (Figure 2-6), allowing access to the **COM Port** and **Baud Rate** menus.
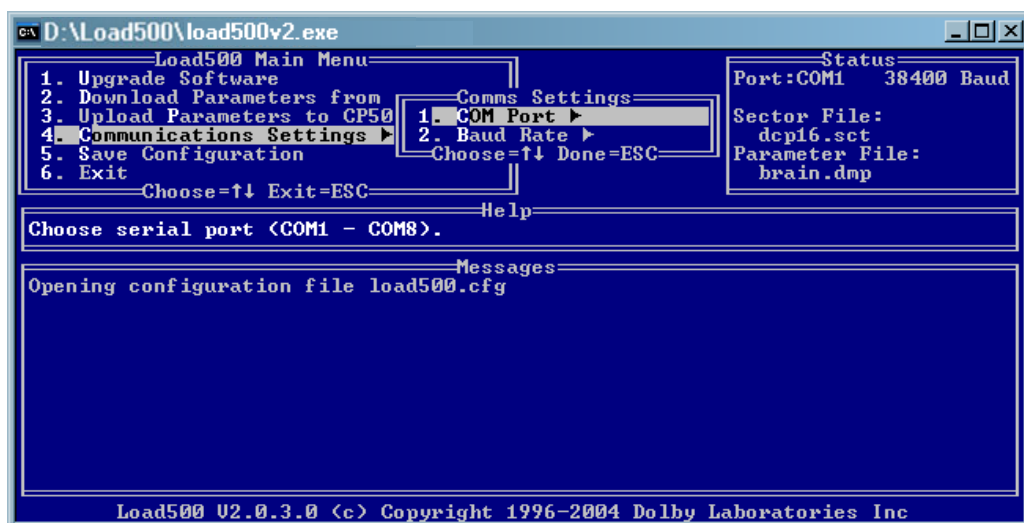
Figure 2-6 Communications Settings

The choice of COM Port will depend on your individual computer settings. Direct Load500 to use your PC's COM port by selecting the port number using the arrow keys (Figure 2-7). Press **Enter** to save your selection. The Status section of the screen shows your selection.
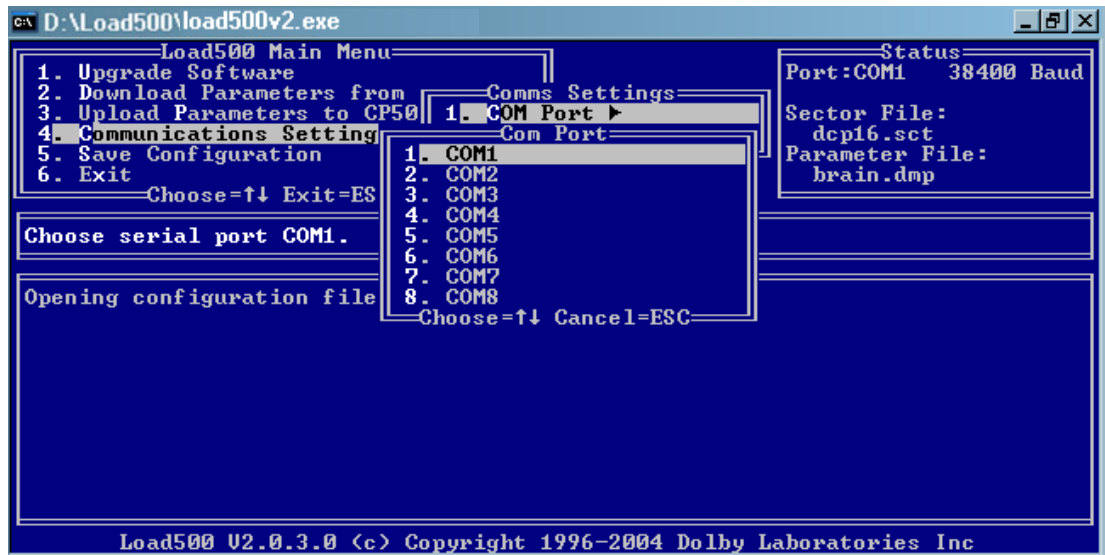
Figure 2-7 COM Port Choices

The **Baud Rate** for data transfer can be set over a wide speed range. It must match the setting in the CP500. The default value of 38400 bps is recommended. (As shown in Figure 2-8.)

Figure 2-8 Port Baud Rate Choices

During the establishment of the data link between the CP500 and your computer, Load500 will attempt to connect to the CP500 starting at 38400 baud (the CP500 default). If this attempt times out, Load500 will try at each of the other possible baud rates in turn (19200, 9600, 4800, 2400, 115200) until it gets a response. Load500 will then reset the CP500's baud rate to match the one selected in Load500's parameters.

2.3.2   Save the Load500 Settings

Having selected the COM port and baud rate, move back to the main menu using the Esc or left arrow keys and select option 5, **Save Configuration.** The settings are saved to your hard disk in a file named load500.cfg located in the same directory as your Load500 program. The settings are automatically recalled when the Load500 program is reopened.
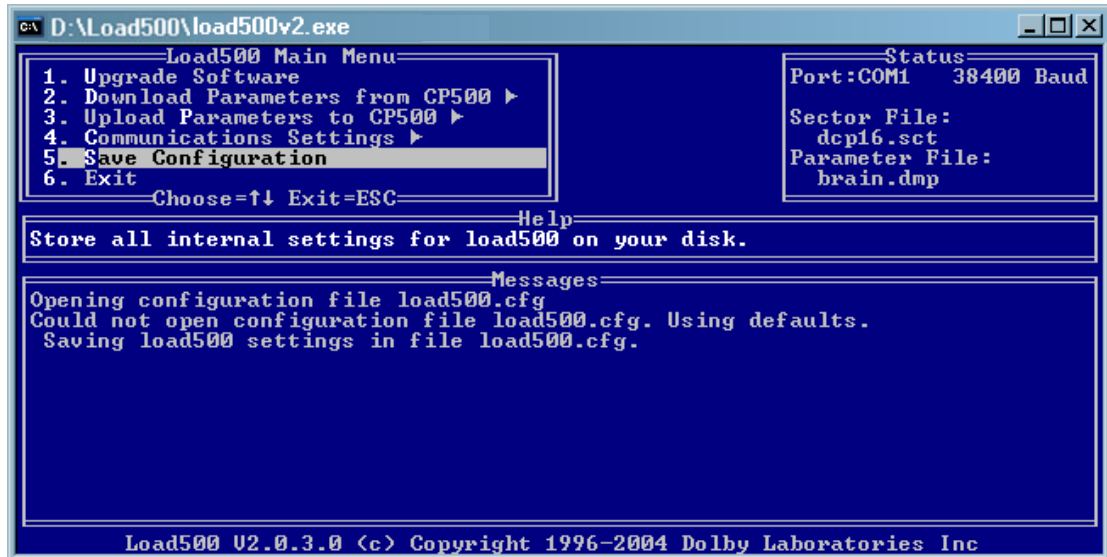
Figure 2-9 Save Load500 Settings

2.4   Downloading Parameters from a CP500

Establish the data link between the CP500 and your computer. See Section 1.3.

Select option 2, **Download Parameters from CP500**.
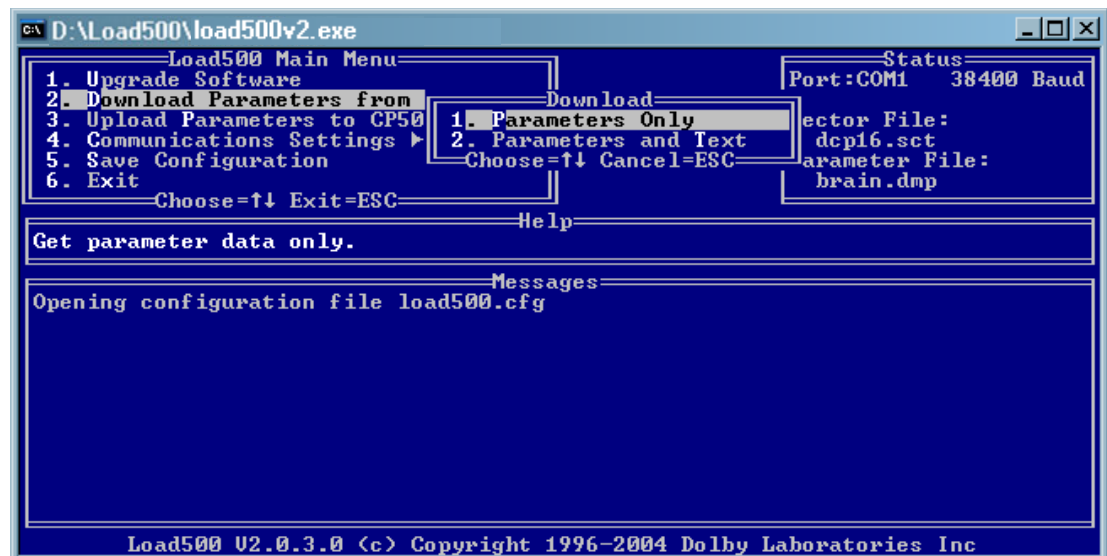
Figure 2-10 Download Parameters from CP500

Choose either **Parameters Only** (the CP500's settings) or **Parameters and Text** (the CP500's settings plus text descriptions).

If the Text option is chosen, the text information downloaded from the CP500 is stored in the first part of the saved file. It can be read or printed using any text viewing program. See Section 3.1 for a sample file.

Note: The text is for information only. It is not possible to change any of the stored CP500 parameters by editing the text.
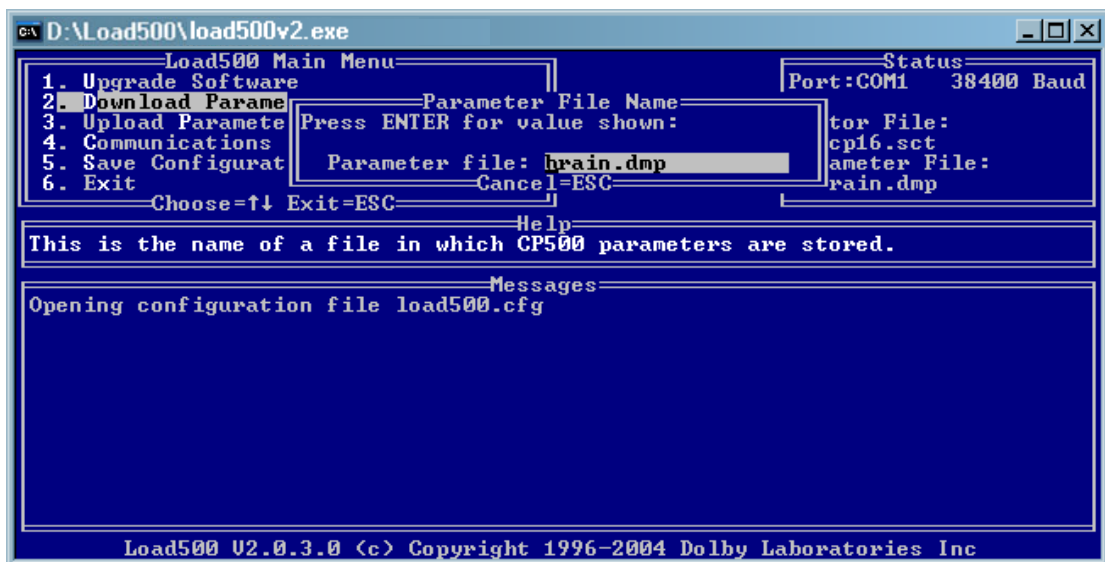
Figure 2-11 Enter File Name

Enter a name for the parameters file you intend to save. The file is stored in the same directory as the Load500 program unless a different path is specified.

Up to 254 characters are allowed to enable saving the path and file name to a subdirectory on your hard disk. The following keyboard keys are active to assist you:

Home (move the cursor to the beginning of your string), **End** (move to the end of your string), and **Ins** (insert characters within your string)

The .dmp extension is not automatically added by the Load500 program and should therefore be included in the typed file name. Alternatively, you can use the .txt file extension which will automatically be associated with your text viewing program. You can then view the file easily.

Note: Do not use the default file name, **brain.dmp**. That name is reserved for temporary use during software upgrade and will be overwritten without warning.

An example string:

C:\Dolby\CP500\Sherwood_Screen5.txt

Press **Enter** to begin downloading. Download progress is shown on both the CP500 screen and the Load500 program screen. The CP500 parameters data (approximately 3k bytes in hex) will be transferred.

2.5   Uploading Saved Parameters to a CP500

Establish the data link between the CP500 and your computer. See Section 1.3. Write down the parameters file name (and its path if necessary) to be uploaded. Select menu option 3, **Upload Parameters to CP500.**
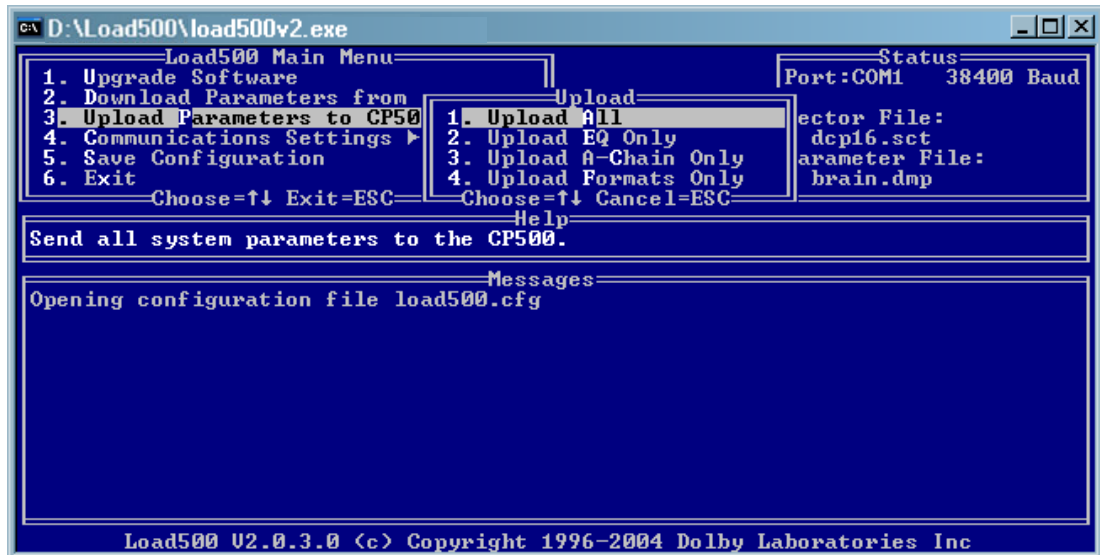
Figure 2-12 Upload Parameters to CP500

Load500 provides four choices for the data transfer:

1. Upload all stored parameters to the CP500
2. Upload only the stored B-chain EQ settings to the CP500
3. Upload only the stored A-chain settings to the CP500
4. Upload only the stored format settings to the CP500

After choosing the desired upload type, enter the name of the stored parameters file on your hard disk. Load500 does not provide a browsing facility for locating the file. The exact file name including the correct file extension must be known. The program assumes that the file is stored in the same directory as the Load500 program unless a different path is specified. The following keyboard keys are active to assist you:

> **Home** (move the cursor to the beginning of your string), **End** (move to the end of your string), and **Ins** (insert characters within your string).

Press **Enter** to begin uploading. Upload progress is shown on both the CP500 screen and the Load500 program screen.

2.6   Upgrading CP500 System Operating Software

From time to time new CP500 operating software may be released for the CP500. To upgrade a CP500, a file is supplied to installers for use with the Load500 program. The new upgrade software will be supplied in a format called a sector file, with the file extension .SCT.

Establish the data link between the CP500 and your computer. See Section 1.3.

Select menu option 1, **Upgrade Software** as shown in Figure 2-13.
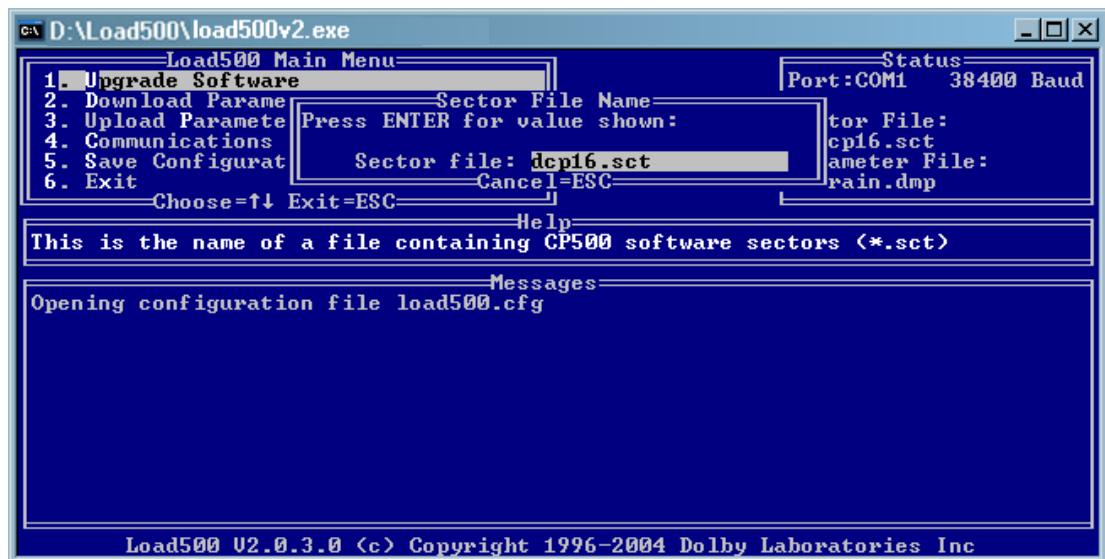
Figure 2-13 Upgrade CP500 Software Menu Select

Type the name of the new .sct file in the space provided. If no path is typed, the program will look for the file in the directory where Load500 was started. The correct .sct file may already be shown if it was used previously and saved using the Save Configuration menu option.

Press **Enter** to start the upgrade process. **The upgrade must not be interrupted.** If the data transfer is incomplete, follow the instructions displayed on the Messages screen to recover. If power is lost during transfer, the flash ROM ICs in the CP500 must be changed. See Section 3.2.

Note: The file name "dcp16.sct", which may appear in the Status window as the sector file (and which will also appear when the Upgrade Software option is first selected) is a Load500 default name. It is not a valid file and should not be used.

If the CP500 is not set in the correct Data Transfer mode, the Load500 software will continue to attempt connecting to the cinema processor until the correct mode is selected. See Section 1.3. A timeout count will be displayed in the message screen.

The screen will display the progress of the upgrade operation as shown in Figure 2-14. It will also show any problems, such as the failure to make a connection.

In the following example, the new CP500 software file is named Ver162.sct.

```
Command Prompt - load500                                         _ □ ×
═══════Load500 Main Menu═══════                    ═══Status═══
1. Upgrade Software                                Port:COM2    38400 Baud
2. Download Parameters from CP500 ▶
3. Upload Parameters to CP500 ▶                    Sector File:
4. Communications Settings ▶                         Ver162.sct
5. Save Configuration                              Parameter File:
6. Exit                                              brain.dmp
═══════Choose=↑↓ Exit=ESC═══════
═══════════════════════════════Help═══════════════════════════════
This is the name of a file containing CP500 software sectors (*.sct)
═══════════════════════════════Messages═══════════════════════════
Opening configuration file load500.cfg
38400 Baud
Upgrade from Ver162.sct
Opening sector file Ver162.sct
Checking sector file Ver162.sct
Opening COM port
Connecting to CP500...

Connected.
Requesting parameters from CP500
Receiving parameters from CP500...
..............
Unpacking and checking braindump file.
Version number: 1.62
Saving parameter file brain.dmp.
ASCII Length = 14898, Data length = 2364 bytes.
A patch is not needed or not available for version 1.62.
Initiating sector transmission to CP500:
        468 software sectors, 5 braindump sectors
Acknowledged.
Sending sectors to CP500
Sect #  Ack      Nak     Timeout
 388    473
All Done.




        Load500 V2.0.3.0 (c) Copyright 1996-2004 Dolby Laboratories Inc
```

Figure 2-14 Upgrade CP500 Software Messages Screen

After checking the validity of the new software file, Load500 establishes a link with the CP500. The program then continues to automatically download all the CP500 system settings, A-chain alignment, B-chain alignment, user formats, and so on to a temporary file called **brain.dmp**. These parameters will be restored to the CP500 at the end of the upgrade process. At a baud rate of 38400 this process should take about 10 seconds. If a brain.dmp file already exists from previously upgrading software or downloading settings from a different processor, the previous file will be overwritten with the current CP500 parameters.

The CP500 front-panel display will show the progress of the download.

After storing the current settings from the CP500, Load500 will begin sending the new software file to the CP500. Progress is indicated by the incrementing numbers of sent and acknowledged sectors in the messages window. The total number of sectors acknowledged will be the sum of the software sectors and the parameter file's data sectors transferred to the CP500.

All Done indicates the software upgrade process is complete. At a baud rate of 38400 this process should take about 40 seconds. The CP500 automatically reboots to begin operating using the new software.

After a new CP500 software file has been used for the first time it may be useful to store that name within the Load500 configuration file so that it will automatically be selected during future upgrades. This can easily be done by selecting Menu Option 5, **Save Configuration** after the All Done message appears.

Chapter 3
Reference

3.1   Sample Parameter File

The text in this file is for information only. It is not possible to change any of the stored CP500 parameters by editing the text.

```
#****************************************
# Dolby CP500 Parameter Text File
# Software Version: Version 1.51
# Build Date: 1:12:1999 Time: 16:29:24
#****************************************
# Custom Format Selections:              # 1.6 kHz     0.0 dB
                                         # 2.0 kHz     0.0 dB
# Soft Key 1: Format 01                  # 2.5 kHz     0.0 dB
# Soft Key 2: Format 04                  # 3.15 kHz    0.0 dB
# Soft Key 3: Format 05                  # 4.0 kHz     0.0 dB
# Soft Key 4: Format 10                  # 5.0 kHz     0.0 dB
# Soft Key 5: Format 11                  # 6.3 kHz     0.0 dB
# Soft Key 6: Format 43                  # 8.0 kHz     0.0 dB
# Soft Key 7: Format 60                  # 10 kHz      0.0 dB
# Soft Key 8: Format 61                  # 12.5 kHz    0.0 dB
                                         # 16 kHz      0.0 dB
# Format Screen: Standard
                                         # Left Channel Level: 0
# Wakeup Format: Last Selected Format
                                         # Left Channel Bass: 32
# Digital Surround Delay: 0ms
# Optical Surround Delay: 20ms           # Left Channel Treble: 32
# Soundhead Delay: 16
                                         # Left Channel CrossOver: 22
# Projector 1 Left Gain: 0
# Projector 1 Right Gain: 0              # Center Channel:
# Projector 2 Left Gain: 0
# Projector 2 Right Gain: 0              # 40 Hz       0.0 dB
# Projector 1 Left EQ: 0                 # 50 Hz       0.0 dB
# Projector 1 Right EQ: 0                # 63 Hz       0.0 dB
# Projector 2 Left EQ: 0                 # 80 Hz       0.0 dB
# Projector 2 Right EQ: 0                # 100 Hz      0.0 dB
                                         # 125 Hz      0.0 dB
# EQ settings:                           # 160 Hz      0.0 dB
                                         # 200 Hz      0.0 dB
# Left Channel:                          # 250 Hz      0.0 dB
                                         # 315 Hz      0.0 dB
# 40 Hz       6.0 dB                     # 400 Hz      0.0 dB
# 50 Hz       6.0 dB                     # 500 Hz      0.0 dB
# 63 Hz       0.0 dB                     # 630 Hz      0.0 dB
# 80 Hz       3.25 dB                    # 800 Hz      0.0 dB
# 100 Hz      0.0 dB                     # 1.0 kHz     0.0 dB
# 125 Hz      0.0 dB                     # 1.25 kHz    0.0 dB
# 160 Hz      0.0 dB                     # 1.6 kHz     0.0 dB
# 200 Hz      0.0 dB                     # 2.0 kHz     0.0 dB
# 250 Hz      0.0 dB                     # 2.5 kHz     0.0 dB
# 315 Hz      0.0 dB                     # 3.15 kHz    0.0 dB
# 400 Hz      0.0 dB                     # 4.0 kHz     0.0 dB
# 500 Hz      0.0 dB                     # 5.0 kHz     0.0 dB
# 630 Hz      0.0 dB                     # 6.3 kHz     0.0 dB
# 800 Hz      0.0 dB                     # 8.0 kHz     0.0 dB
# 1.0 kHz     0.0 dB                     # 10 kHz      0.0 dB
# 1.25 kHz    0.0 dB                     # 12.5 kHz    0.0 dB
```

```
# 16 kHz      0.0 dB                          # Left Surround Channel CrossOver: 22

# Center Channel Level: 0                     # Right Surround Channel:

# Center Channel Bass: 32                     # 63 Hz       0.0 dB
                                              # 125 Hz      0.0 dB
# Center Channel Treble: 32                   # 250 Hz      0.0 dB
                                              # 500 Hz      0.0 dB
# Center Channel CrossOver: 22                # 1.0 kHz     0.0 dB
                                              # 2.0 kHz     0.0 dB
# Right Channel:                              # 4.0 kHz     0.0 dB
                                              # 8.0 kHz     0.0 dB
# 40 Hz       0.0 dB                          # 16 kHz      0.0 dB
# 50 Hz       0.0 dB
# 63 Hz       0.0 dB                          # Right Surround Channel Level: 0
# 80 Hz       0.0 dB
# 100 Hz      0.0 dB                          # Right Surround Channel CrossOver: 22
# 125 Hz      0.0 dB
# 160 Hz      0.0 dB                          # Sub Woofer Channel:
# 200 Hz      0.0 dB
# 250 Hz      0.0 dB                          # Frequency: 25 Hz
# 315 Hz      0.0 dB                          # Q Setting: 0
# 400 Hz      0.0 dB                          # Cut: 0.0 dB
# 500 Hz      0.0 dB
# 630 Hz      0.0 dB
# 800 Hz      0.0 dB                          # Subwoofer Channel Level: 0
# 1.0 kHz     0.0 dB                          # System Password: 0
# 1.25 kHz    0.0 dB                          # LCD Contrast: 180
# 1.6 kHz     0.0 dB                          # LCD Brightness: 255
# 2.0 kHz     0.0 dB                          # Reversion Mode: Normal
# 2.5 kHz     0.0 dB                          # Automation Mode: Direct
# 3.15 kHz    0.0 dB                          # Auditorium Fader: Disabled
# 4.0 kHz     0.0 dB                          # Mute Fade Speed: 400ms
# 5.0 kHz     0.0 dB                          # FLASH Write Cycles: 6
# 6.3 kHz     0.0 dB                          # FLASH Checksum: 0x38da
# 8.0 kHz     0.0 dB
# 10 kHz      0.0 dB                          # System Module Configuration:
# 12.5 kHz    0.0 dB
# 16 kHz      0.0 dB                          # DACs, Digital EQ and Matrix Cards Present.
                                              # CAT No.685 6-Channel ADC Module Present.
# Right Channel Level: 0                      # Dolby  Digital Sub-System Present.
                                              # CAT No.683 Crossover of Type 1 is Present.
# Right Channel Bass: 32                      # Channels 1 & 2 have A-Type & SR Present.

# Right Channel Treble: 32                    # Auto Digital Settings

# Right Channel CrossOver: 22                 # Standard Format Screen Enable:  DISABLED
                                              # Custom Format Screen Projector One Enable:
# Left Surround Channel:                      DISABLED
                                              # Custom Format Screen Projector Two Enable:
# 63 Hz       0.0 dB                          DISABLED
# 125 Hz      0.0 dB
# 250 Hz      0.0 dB                          # Auto Digital Custom Format Bindings
# 500 Hz      0.0 dB
# 1.0 kHz     0.0 dB                          # Soft Key 1:  Source
# 2.0 kHz     0.0 dB                          # Soft Key 2:  Source
# 4.0 kHz     0.0 dB                          # Soft Key 3:  Source
# 8.0 kHz     0.0 dB                          # Soft Key 4:  Target
# 16 kHz      0.0 dB                          # Soft Key 5:  No Binding
                                              # Soft Key 6:  No Binding
# Left Surround Channel Level: 0              # Soft Key 7:  No Binding
                                              # Soft Key 8:  No Binding
```

```
#****************************************
# Dolby CP500 Parameter Data File
# Software Version: Version 1.51
# Build Date: 1:12:1999 Time: 16:29:24
#****************************************

$START
0x00, 0x06, 0x01, 0x01, 0x00, 0x02, 0xf0, 0x00, 0x00, 0x02,
0xf0, 0x15, 0x00, 0x02, 0xf0, 0x1a, 0x00, 0x00, 0x00, 0x07,
0xff, 0xff, 0x00, 0x07, 0xff, 0xff, 0x00, 0x00, 0x00, 0x00,
0x00, 0x00, 0x00, 0x00, 0x00, 0x21, 0x00, 0x66, 0x16, 0x66,
```

<Snipped>

```
$END
```

```
        # End of file
```

3.2   Changing the CP500 Flash ROM ICs

The main system software in the CP500 is located on the Cat. No. 684 board. All alignment and format settings are stored in two flash ROM memory ICs. If power is lost during a software upload process, these ICs must be changed. Before changing the ICs, put on a grounded wrist strap to prevent damage to the ICs from electrostatic discharges.

1. With all power to the CP500 turned off, remove the Cat. No. 684 board by carefully disconnecting the ribbon cable from the front panel and operating the two levers at the ends of the board.
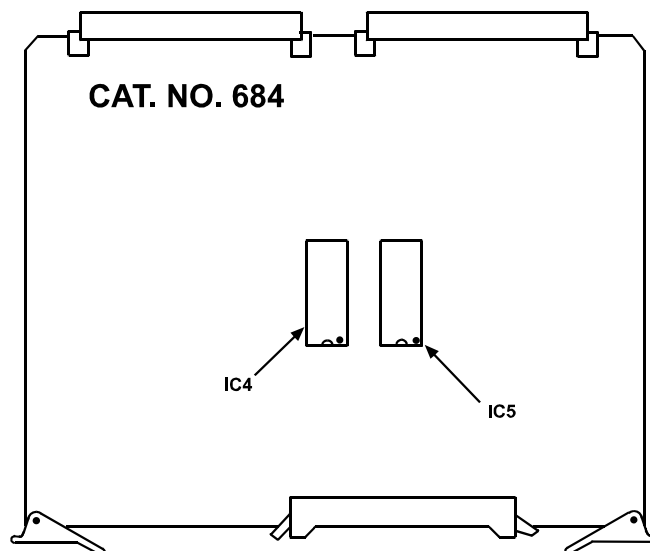
Part No.

IC 4   84164/a.bc/yyww
IC 5   84165/a.bc/yyww

Note: "a.bc" indicates the firmware version number
            "yyww" indicates year and week of manufacture

Figure 3-1 Flash ROM IC Locations in the CP500

2. Note the orientation of IC 4 and IC 5 then carefully remove them from the Cat. No. 684. Replace these with the new ICs, being careful to maintain the correct orientation and checking that all pins are correctly inserted.

3. Return the Cat. No. 684 to the CP500 and reconnect the ribbon cable.

4. Restore power to the CP500 and check that the software loads correctly and shows the desired software version.

5. Upload the original system alignment settings using Load500.