

PLASMON M500
500 DISK OPTICAL LIBRARY SYSTEM

USER'S GUIDE

PLASMON IDE

1. Revision History

Revision	Date	Description	Pages
A	4/20/1998	First release	

PREFACE

The information contained within this User's Guide describes the operation of the following M-Series Plasmon library systems:

- M500

Federal Communications Commission (FCC) Radio Frequency Interference Statement

Class A digital device

Note:	This equipment has been tested and found to comply with the limits of a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.
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Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Unauthorized changes or modifications could void user's authority to operate the equipment.

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.

Canadian Department Of Communications (DOC) Radio Frequency Interference Regulations

Note:	This Class A digital apparatus meets all requirements of the Canadian Interference causing equipment regulations. Cet appareil numerique de la classe A respecte toutes les exigences du reglement sur le materiel brouilleur du Canada.
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Power Cord Set Selection

The voltage rating and the current rating of the power cord set shall be higher than the rated voltage and current of this unit.

The voltage rating of the power cord set shall be higher than the power source.

For the US and Canada:

Power cord must be UL listed and CSA labeled. Type SJT, SVT, ST, SJO or SO, 3- conductors, No. 18 AWG, rated 125V, 10 A.

For Germany and Continental Europe:

STROMANFNAHME: 100-240 VAC, 50/60 Hz, 2.5A.

Für eine 230V-Anwendung, ist eine harmonisierte <HAR> konfektionierte Leitungsschnur, Typ H05VVF3G1.00, die für 250V/10A oder die Gleichwertigkeit geeignet ist, zu benutzen.

Note:	If you have questions in regards to proper cord sets consult your distributor for suitable cord set.
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Caution!

The controller board contains a lithium battery which could explode if incorrectly replaced. Replace only with a qualified replacement battery. Return the old battery to the manufacturer for disposal or dispose of in accordance with local regulations for the disposal of lithium batteries.

“**ATTENTION:** IL Y A DANGER D’EXPLOSION S’IL Y A REMPLACEMENT INCORRECT DE LA BATTERIE. REMPLACER UNIQUEMENT AVEC UNE BATTERIE DU MEME TYPE OU D’UN TYPE RECOMMANDE PAR LE CONSTRUCTEUR. METTRE AU REBUT LES BATTERIES USAGEES CONFORMEMENT AUX INSTRUCTIONS DU FABRICANT.”

Vorsicht!

Explosionsgefahr bei unsachgemäßem Austausch der Batterie. Ersatz nur durch denselben oder einen vom Hersteller empfohlenen gleichwertigen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers

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2. Purpose

The purpose of this User's Guide is to provide end users of the M-500 Series library system with sufficient information to operate the system. Any other use of the information contained herein or of this document is prohibited. This manual shall not be reproduced in part or in whole without the prior written consent of Plasmon IDE.

To purchase additional copies of this document, contact the Plasmon IDE Order Entry Department and request **part number 304567-000 Rev. A**

3. Support Information

For support assistance, contact:

	North America, South America, Asia Pacific	Europe, Africa, Asia, Middle East.
Address	Plasmon IDE 9625 West 76th Street Eden Prairie, MN 55344	Plasmon Data Limited Whiting Way Melbourn, Herts. SG8 6EN
Telephone	(612) 942-2982	+44(0)1763 262 963
Fax	(612) 942-2958	+44(0)1763 264 444
BBS	(612) 946-4130	+44(0)1763 264 453
Email	support@plasmon.com	techsupport@plasmon.co.uk
WWW	http://www.plasmon.com	http://www.plasmon.co.uk

When contacting Plasmon for support assistance, please provide the following information:

- Serial number of the library system
- Model number of the library system
- Description of the problem or reason for the call (including error codes if appropriate)

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U.S. Patent Number 5,602,821

4. General Product Information

4.1 *Functional Description*

The M-Series M500 library makes multiple Optical disk cartridges available to computer systems for reading or writing. This library offers a capacity of 500 disks. Disks may be added or removed through the mailslot when the library is online.

The library systems use a double picker to make rapid disk exchanges and offer fast performance in a multi-user environment. The double picker holds two disks simultaneously.

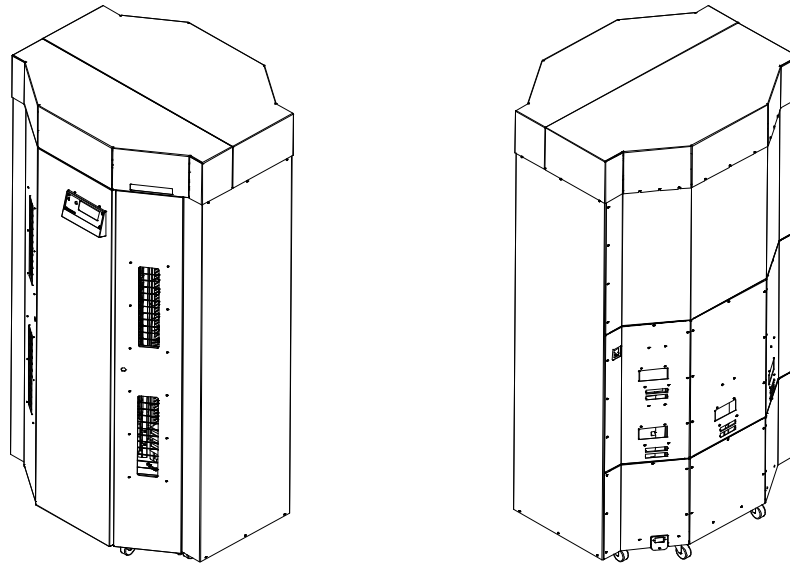


Figure:1 Front and Rear View

4.1.1 Major Hardware Components

this table briefly describes the library system's major components and their functions:

Major Component	Description and Function
Left and right front service access panel	Front panels of the system used at installation and deinstallation to insert or remove media cartridges. These panels are locked to prevent the removal of cartridges from the unit. When the library system is online, the door when opened deactivates an interlock switch and stops all operations.
Mailslot	Access for entering or removing individual cartridges.
Operator panel	Keypad and display controller which provide the operator communication with the system. Also called the front panel, it is used to display tests, modes, error codes and other messages.
Media store	Area that holds each cartridge in place. Consists of two vertically arranged plates with plastic grooved guide panels that hold each cartridge.
Media Transport Element	Mechanism that moves cartridges between storage locations and the disk drives, and consists of the picker and the flip assembly.
Drives	The drives used in the library system to allow the reading and writing of data to the system. They have been fully tested to work with the library system,
SCSI interface	Connection between the library system and a host computer. The interface to the library system is single-ended. The SCSI Interface can be configured into single, dual, or quad bus.

Table 1: Major Hardware Components

4.1.2 Identifying Individual Drives, Storage slots, and Columns

Within the library system, drives, media storage slots, and columns all follow the same numbering scheme. Looking at the system facing the operators panel, the columns are from right to left starting with column 1 (far right), and the storage slots are numbered from the bottom up, with slot 1 starting at column 1. Drives are numbered from right to left, with drive 1 in column 2.

D5 SCSI ID 5	D3 SCSI ID 3	D1 SCSI ID 1
D6 SCSI ID 0	D4 SCSI ID 4	D2 SCSI ID 2

Figure:2 Drive Numbering

4.1.3 System Overview

The library system features the following capabilities: command processing, media movement, importing and exporting, and error recovery and diagnostics.

4.1.4 Command Processing

The library system responds to SCSI commands from a host computer system to load and unload drives, and move cartridges within the library.

4.1.5 Media Movement

The media transport element is used to move single disks within the library system between the media storage area and a drive or the mailslot. To speed the process, the media transport element can hold two cartridges, moved simultaneously.

4.1.6 Importing and Exporting

Importing and exporting of single disks can be performed by using the mailslot. The mailslot is accessible to both pickers in the media transport element. Access to the mailslot function is controlled by the application software, to provide data security.

Manually importing a cartridge is performed by pressing the open/close mailslot button, after inserting a cartridge the mailslot will close automatically.

After manually exporting a cartridge the operator must press the open/close mailslot button to close the mailslot.

4.1.7 Error Recovery and Diagnostics

In the event of an error when online, the library system retries the operation that failed. If this operation fails, the library system will attempt to return the media cartridges to their original location before the operation started, and will send an error code to the host computer. This error code will also be displayed on the front panel of the library system.

4.2 Component Interaction

The following example describes how the library system components interact. Assuming the library system is online and there is a media cartridge already in the drive:

1. The SCSI command *Exchange Medium* is received, and the media location and drive are specified.
2. The media transport element moves to the storage slot holding the media.
3. One picker extends forward, grabs cartridge 1 out of the storage slot, and retracts with the cartridge back into the media transport element. The location of this cartridge is retained in the library system's non-volatile memory.
4. The media transport element changes pickers and moves down to the destination drive.
5. The picker without a cartridge extends forward, grabs cartridge 2 currently in the drive, and retracts with the cartridge back into the media transport element.
6. The media transport element changes pickers and moves into position to insert cartridge 1 into the drive.
7. The picker containing cartridge 1 extends forward and inserts the cartridge into the drive, then retracts back into the media transport element.
8. The media transport element moves to the original location of tray 2 (in other words, which storage slot it was stored in).
9. The picker with cartridge 2 extends forward and inserts the cartridge back into the storage slot. This completes the operation.
10. Completion status is returned to the host computer.

4.3 Library System Operating Modes

The library system can operate in the following modes:

- On-line Mode
- Setup Mode
- Maintenance Mode (Service Technician Only)

4.4 On-line Mode

This is the normal operating mode for the library system, when in this mode the equipment is ready to receive and execute commands from software.

4.5 Setup Mode

Setup mode allows certain library system configuration parameters to be set and basic library system parameter and error information to be displayed. This mode may only be invoked from the front panel. It takes the medium changer device completely off-line (however, the drives remain on-line).

4.6 Maintenance Mode

Maintenance mode allows the service engineer to run a series of tests on the library system using the device's LCD display and keypad.

5. Setup and Installation

It is strongly recommended that a qualified Technical Service Representative perform the installation or deinstallation procedures.

5.1 *Unpacking Instructions*

The library systems are shipped from the factory assembled and aligned. There is an unpacking label on the outside of the shipping container. Allow sufficient time for the library system to normalize to room temperature before applying power.

To unpack the library system:

1. Remove the library system from the shipping crate, moving it in the following manner:
 - Push the unit to the desired location, rolling the unit on its casters. When the unit is positioned as desired, push down the lever on each caster to lock the casters in place.
2. If loading blank cartridges, unlock the right or left front service access panel and install the cartridges in the desired slots.
3. Make sure cartridges are inserted fully and close panels and lock
4. Power up the library system (see section 5.3, *Powering Up*).
5. Store keys in a safe location to protect the integrity of cartridge placement.
6. Save all shipping materials.

5.2 *Packing Instructions*

See section 6.6.7 *Park Jukebox*, for instructions on parking the system. The library system must be parked before proceeding with packing the system.

The storage slot detents are not strong enough to hold the cartridges during shipment of the library system. Before shipping the library system, remove all cartridges.

To pack the system:

1. Turn OFF the AC power switch.
2. Remove the SCSI host adapter cable, terminator plug and power cable from the rear of the library system.
3. Obtain the original shipping crate.
4. Pack the library system according to instructions provided separately with the unit.

5.3 Powering Up

Power up the library system following these steps:

1. Plug the AC power cord supplied with the library system into the power receptacle located on the lower rear panel (right side).
2. Plug the SCSI terminator supplied with the library system into the correct SCSI connectors (depending on the bus configuration) located on the lower rear panel (right side).
3. Allow the system to normalize to the room temperature.
4. Turn on the AC power switch at the lower left rear of the unit. The LCD panel displays:

```
500-disk  SN NNNNNNNNNNNN
          FIRMWARE VN.NN
```

The serial number and the firmware version display.

The library system performs a diagnostic check of its internal systems and displays:

```
ID:M;  N,N,N,N,N,N
CE -- -- -- -- --
```

The top display line indicates the SCSI IDs.
N = Drive 1, 2, 3, 4, etc. SCSI ID.
M = Robotics SCSI ID.

Enabled mode settings display on the second line. The defaults are Changer Ejects on, all others off.

CE = Changer Ejects	IP = Ignore Parity
WL = Wait on Load	RR = report recovered errors
SS = Slow Scans	LR = Limit Recovery

Table 1: Mode Setting Abbreviations

5.4 Connecting the SCSI Interface

There are three configurations for the SCSI Interface in the M500 Library.

1. Single SCSI bus
2. Dual SCSI bus
3. Quad SCSI bus

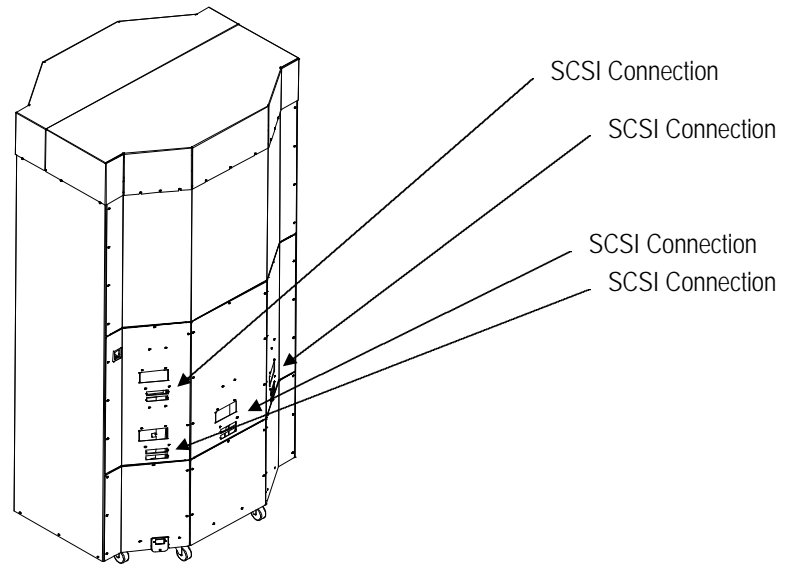


Figure 3: SCSI Connection Location

5.5 *Running Setup Mode*

To change from default settings, it may be necessary to run Setup mode. Refer to section, 6 in this manual.

5.6 *Powering Down*

To shut down the library system:

1. Shut down from the host computer.
2. Turn off the AC power switch.

5.7 SCSI Bus Configuration for Single, Dual or Quad Bus

M-500 SYSTEM BLOCK DIAGRAM

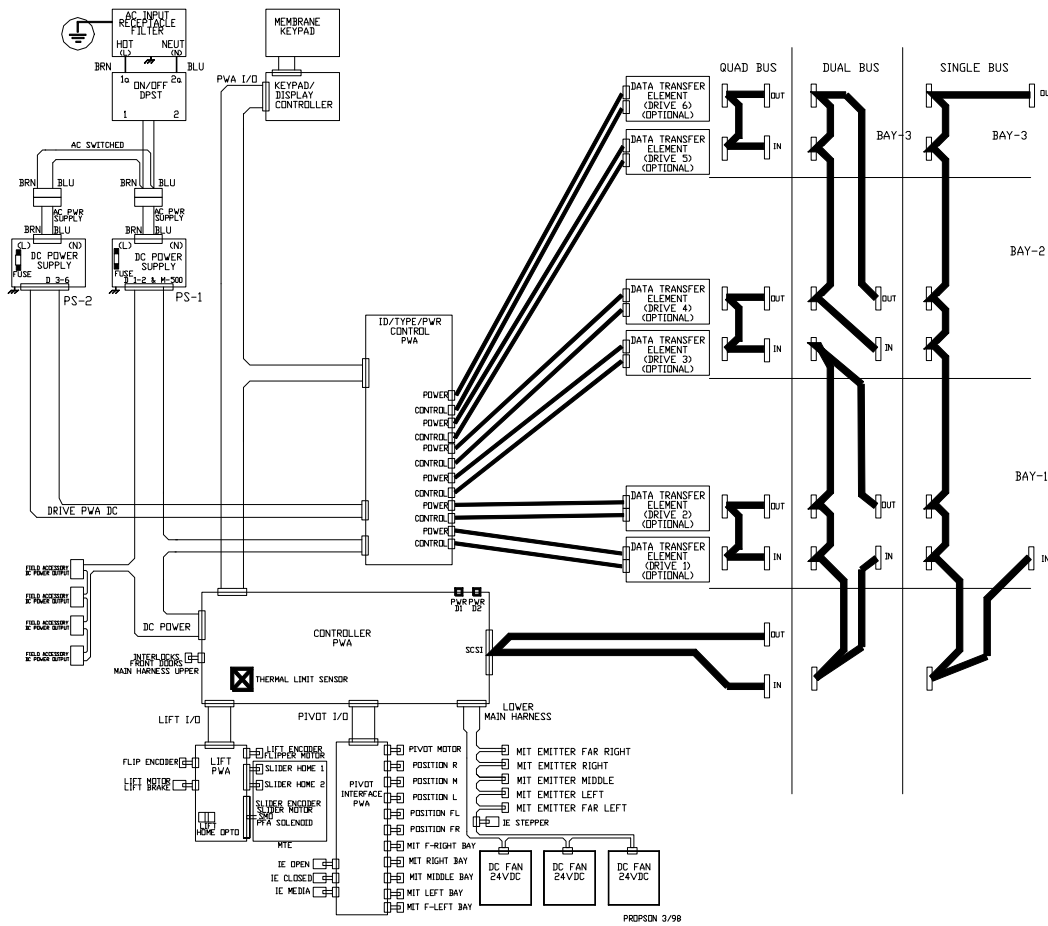
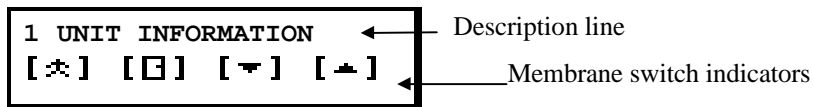


Figure 4: SCSI Bus Configuration

6. Procedures

6.1 Using the Operator's Panel and Menu


The library system has an LCD (Liquid Crystal Display) panel, located on the upper front panel. Below the LCD panel are membrane switches, used to toggle between modes or functions of the unit.



Description Line

The top row displays the number and name of the mode or test. An ellipsis (...) following a name indicates that the selection contains several submenus.

Membrane Switch Indicators

The bottom line legend displays the functions of the membrane switch keys located just below the legend. Pressing  at any time returns you to the previous menu.

The symbols in *Table 3: LCD Symbols and Definitions* are used with the library system. The symbols display on the LCD panel when appropriate.

Use of Italics Within This User Guide

Within the LCD panel illustrations, *italic type* is used to represent a placeholder for data. On the machine LCD, you will see the actual data. For example, Drive *N* in the manual displays as Drive 1, 2, 3, etc. on the machine LCD.

The following table format is used to describe how to navigate through the LCD panel selections:




Step	Press	To ...	The LCD displays ...	Tips/Notes
1.		Run the selection.	SCSI ADDRESS <i>N</i>	Use  or  to decrease or increase the robotic changer SCSI ID.

Table entries have the following functions:

Table Heading	Function
Step	Numbers the step. Some action needs to be performed.
Press	Directs you to the membrane switch key to press. Not all steps require you to press a key.
To	Describes what the step performs.
The LCD displays	Shows the actual message you see on the LCD panel.
Tips/Notes	Provides helpful information to further describe this step.

Table 2: How to Use the LCD Step Instructions

The following symbols appear on the LCD panel and have the following functions:














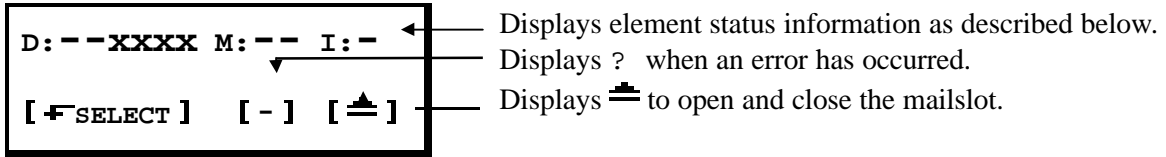
This LCD Symbol	Is Used To ...
	Make a first selection, and move to a submenu.
	Exit a menu item.
	Allow a mode setting to be changed.
	Confirm a selection or element contains media.
	Increment a numeric value.
	Decrement a numeric value.
	Go to the previous menu item.
	Go to the next menu item.
	Open or close the mailslot.
	Display a list of menu items.
	Run a motor or execute a function.
	Indicate that a drive is turned off or is not installed.
	Indicate that an element does not contain media.

Table 3: LCD Symbols and Definitions

When you initially power up the library system, you can perform the following functions: select a library system mode, access information about an error (if an error has occurred) and open or close the mailslot.

When the library system powers up, the LCD displays:



Refer to the following table for an explanation of the symbols that may appear on the LCD at power up.

Symbol	Meaning
D	Drive status
M	Media transport Element (pickers) status
I	Mailslot status
X	Drive is turned off or is not installed
—	Empty element
≡	Open or close mailslot
?/C	Error has occurred/clear error

Table 4: LCD Symbols at Power Up

Pressing the ←SELECT key displays a menu of functions, as listed below.


Library System Function	Description	Reference
Unit Information	A: Serial number B: Firmware version	
Number of Buses	Choose between single, dual, or quad bus configuration.	
Changer Address	Set the SCSI ID for the robotic changer	
Drive Addresses	Set the SCSI ID's for the drives	

Library System Function	Description	Reference
Mode Settings	Set the powerup default and current mode settings	
Drive States	Check or change the on or off status of the drives	
Element Status	Check the empty/full status of the elements	
Power-on Hours	Check the total time the system has been powered up	This may not be reset
Drive Load Counts	Check how many times each drive has been loaded with media	
Scan Elements	Initiate the system to scan each element for media present	
Unload Drives	Removes cartridges from all drives	
Park Jukebox	Used to unload the system of all media cartridges, and prepare it for shipment	
Drive Tests	Test the read write capabilities of the drives	
Error Statistics	View the 10 most frequent errors	
Error Log	View the 10 most recent errors	
Event History	List the last event string that occurred before an error condition	
Unit Cycle Counts	Check the total cycles of the system	This may not be reset
Functional Counts	View the cycles of specific components	
Library Configuration Test	Run configuration tests	
Library Defaults	Restore library default settings	

Table 5: Library System Functions

Upon power up, you can perform one of the following actions:

Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.	F -OR-	Enter the setup functions menu.	TAKE OFFLINE ? [-] YES [-] NO	Pressing yes will bring you to the first setup selection UNIT INFORMATION



Step	Press	To ...	The LCD Displays ...	Tips/Notes
	?	Display the description of the error.	ERROR DESCRIPTION	The error description displays for 5 seconds. During this time, press the C key to clear the error display; otherwise, the error number redisplay.
	-OR- 	Automatically open or close the Mailslot.		

6.2 Unit Information

In the Unit Information mode, the maximum disk capacity, serial number as well as the current version of firmware, will be displayed

To enter Unit Information mode, press the **SELECT** key on the front panel. The LCD displays:

TAKE OFFLINE ?
[-] YES [-] NO

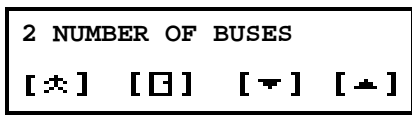
Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.	YES	Enter Setup Mode.	UNIT INFORMATION	To change settings in setup mode, the system must be taken offline. Make sure the system administrator removes the library from the control of software before taking offline.
2.		Enter Unit Information.	A: SERIAL NUMBER [*] [0] [*] [*]	Press  to display the maximum capacity and the serial number..

Step	Press	To ...	The LCD Displays ...	Tips/Notes
3.		Display the current version of firmware.	B:FIRMWARE VERSION [] [] [] []	Press to display the current version of firmware.

6.3 Number of Buses

The system can have three bus configurations, single, dual, or quad. Use this menu selection to configure.

To configure the number of buses, press the **FSELECT** key on the front panel and take unit offline press the key once. The LCD displays:

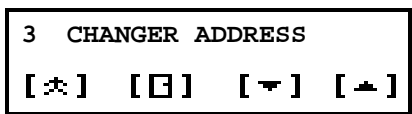


Step	Press	To ...	The LCD displays ...	Tips/Notes
1.		Configure the number of buses.	NUMBER OF BUSES	Use or to identify the number of buses 1,2, or 4
2.		Enter the selection in memory		

6.4 Changer Address

The Changer Address selection is used if you wish to change the SCSI ID (or address) of the robotic changer to make it compatible with your system or with the software you are using. From the Setup menu, select CHANGER ADDRESS

Press the **FSELECT** key on the front panel and take the unit offline, press the key twice. The LCD displays:



Step	Press	To ...	The LCD displays ...	Tips/Notes
1.		Run the selection.	SCSI ADDRESS N	Use or to decrease or increase the robotic changer SCSI ID.
2		Write the new value into non-volatile memory.	CHANGING ADDRESS	

NOTE: No two devices on a SCSI bus may share the same SCSI ID. Make sure you know which IDs are available and not in use on your system.

6.5 Drive Addresses

The Drive Addresses selection is used to change the addresses of the drives.

When you enter this selection, the LCD displays:

```

4 DRIVE ADDRESSES
[<] [0] [ ] [ ]

```

To change the SCSI address of a drive.

Step	Press	To ...	The LCD displays ...	Tips/Notes
1.		Run the selection.	DRIVE N	Use or to select a drive to modify, from 1 to 6.
3.		Set the SCSI address.	SCSI ADDRESS N	Use or to increase or decrease the address, from 0 to 7
4.		Write the new value into non-volatile memory.	CYCLING DRIVE POWER	

6.6 Mode Settings

The Mode Settings options allow you to set up library system preferences. From the Setup menu, select **MODE SETTINGS**. For this selection, the LCD displays:

```

5  MODE SETTINGS
[ * ] [ ] [ < ] [ > ]
  
```

Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.	*	Access mode settings.	A:CHANGER SETTINGS OR B:DRIVE SETTINGS	Press > to access
2.	*	Access the changer settings.	1.CHANGER EJECTS:Y	Press < to toggle from yes to no.
3.	>	Select the next mode setting.	2. WAIT ON LOAD: N	The next mode setting displays.
4.]	Return to the Setup menu.		

Repeat the above steps for the other mode settings. The mode settings are described in the following table:

For this mode setting ...	The available settings are ...	The default setting is ...
Changer Ejects	<p>Y: The library system spins down and ejects cartridges from the optical drives when requested to move cartridges from the drives.</p> <p>N: The library system will not spin down and eject cartridges from the optical drives when requested to move cartridges from the drives.</p>	Y
Wait on Load	<p>Y: The library system will wait for optical drives to spin up and become ready for media access when cartridges are moved into them. (This function does not work with all drives.)</p> <p>N: The library system will not wait for optical drives to spin up and become ready for media access when cartridges are moved into them.</p>	N
Slow Scans	<p>Y: The library will use tactile feedback to sense the empty/full status of cartridge slots.</p> <p>N: The library will use retro-reflective sensors to sense the empty/full status of cartridge slots</p>	N
Ignore Parity	<p>Y: Parity is ignored on the SCSI bus.</p> <p>N: Parity is not ignored on the SCSI bus.</p>	N
Report Recovery	<p>Y: The library will report errors from which it has successfully recovered.</p> <p>N: The library will not return errors from which it has recovered.</p>	N
Limit Recovery	<p>Y: The medium changer device limits the extent of error recovery that the system will perform, leaving cartridges that it cannot move or return to their original location in the medium transport element or the drives.</p> <p>N: The medium changer device does not limit the extent of error recovery.</p>	N

Table 6: Changer Mode Setting Descriptions

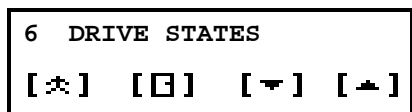
For this mode setting ...	The available settings are ...	The default setting is ...
Write cache enable	Y: The drive performs write cacheing. N: The drive will not perform write cacheing.	N
Verify on Write	Y: The drive would verify on write. N: The drive would not verify after writing.	N
DASD inq Response	Y: The drive would respond as a DASD. N: The drive would respond as an optical device	N

Table 7: Drive Mode Settings

6.6.1 Drive States

To change the On or Off state of a selected drive.

For this selection, the LCD displays:



Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.		Access the drive choice screen.	DRIVE N	Use or arrow to change to a different drive.
2.		View drive state.	DRIVE N: ON,TYPE NV [-] [] [-] []	Pressing will toggle the on or off state of the selected drive.
3.		Exit to the main menu.		

6.6.2 Element Status

The element status command is used to display which storage elements (slots, drives, MTE, or mailslot) of the library system are populated with media.

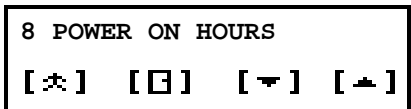
For this selection, the LCD displays:



Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.	↶	View the element status.	SLOTS: Status	The status of the slots displays.
2.	↵	View the drive status.	DRIVES: Status	The status of the drives displays.
3.	↵	View the MTE status.	MTE'S: Status	The status of the MTE displays.
4.	↵	View the mailslot status	IMPEXP: Status	The status of the mailslot displays.
4.	□	Return to the setup menu.		

6.6.3 Power on Hours

The Power on Hours screen is used to display the total hours that the system has had power on. For this selection, the LCD displays:



Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.	↶	View the total hours powered on.	HOURS =NNNNNN	NNNNNN = the hours powered on
2.	□	Return to the Setup menu.		

6.6.4 Drive Load Counts

The Drive Load Counts screen is used to display the number of times a drive has been loaded (This may be reset). For this selection, the LCD displays:

```

9 DRIVE LOAD COUNTS
[ * ] [ 0 ] [ < ] [ > ]

```

Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.	*	View the drive choice screen.	DRIVE = N	<i>N = the drive number</i>
2.	< or >	To choose the drive		
3.	*	To view the drive load counts	COUNT = NNNN	<i>NNNN = Counts</i>
4.	→0	To clear the count		

6.6.5 Scan Elements

The Scan Elements menu selection causes the library system to scan all elements for the presence of media. The lift assembly places the MTE in front of each optical drive and an attempt is made to eject and reinsert a cartridge. It then raises the MTE in front of the media storage slots and an attempt is made to detect the physical presence of media cartridges. For this selection, the LCD displays:

```

10 SCAN ELEMENTS
[ * ] [ 0 ] [ < ] [ > ]

```

Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.	*	Begin the scan	INITIALIZING	This may take a few minutes.
2.			ELEMENTS SCANNED	Returns to menu


6.6.6 Unload Drives

The Unload Drives command is used to unload drives of media that may be loaded. For this selection, the LCD displays:

```

11 UNLOAD DRIVES
[ * ] [ 0 ] [ < ] [ > ]

```

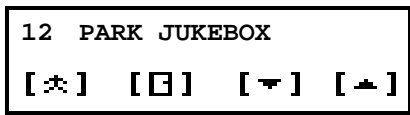

Step	Press	To ...	The LCD displays ...	Tips/Notes
1.		Begin the unload process.	UNLOADING DRIVES...	The MTE will position in front of all drives and send the eject command.
2.			DRIVES UNLOADED	Returns to the main menu.




6.6.7 Park Jukebox

Pressing  will cause the Library System to begin the parking process.

This should only be done when relocating system, and it is strongly recommended it be done by a qualified Service Technician.

For this selection, the LCD displays:

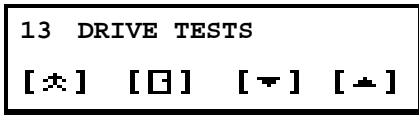


Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.		Begin the park process.	OPEN DOORS, REMOVE ALL CARTRIDGES 	Using the access key unlock front right and left service access panels and remove all media. Then close all access panels.
2.			READY TO PARK? [-] YES [-] NO	Press YES and then wait for the library to park before powering off the system.









Note: This will destroy the software database and you will have to rebuild.

6.6.8 Drive Tests

The Drive Tests menu selection is used to test the library system drives. For this selection, the LCD displays:



Step	Press	To...	The LCD displays...	Tips/Notes
1.	★	Select the test.	DRIVE 1	Press ← or → to select the desired drive.
2.	★	Run the test and display optical disk drive and cartridge information.	A.DRIVE INFORMATION	
3.	★	Start the test.	LOAD NEW DISK?	
4.	NO OR	Tell the library system to use the currently loaded cartridge or to tell the system that a cartridge is not in the optical disk drive selected.		
	YES	Place a new cartridge in the import/export element.	INSERT CARTRIDGE [★] [□] [-] [→]	Insert a cartridge into the mailslot.
5.	★	Load the new cartridge.	PUSH A KEY AFTER EACH DISPLAY-NOW	
6.	any key	Display each new screen of information until completed. Remove cartridge when prompted to do so.	END OF INFO !	Stop the test when this message displays.

Step	Press	To...	The LCD displays...	Tips/Notes
7.		Return to the DRIVE TESTS menu.	13 DRIVE TESTS	
8.		Access the next test.	B.FORMAT CARTRIDGE	
9.		Prepare the test.	INSERT CARTRIDGE [F5] [F4] [-] [F5]	Insert a cartridge into the mailslot.
10.		Load the new cartridge.	LL FORMAT WILL ALTER CARTRIDGE	This message displays briefly.
			ARE YOU SURE ?	
11.	NO OR YES	Stop the test. Start the test. This process takes approximately 30 minutes.	LL FORMATTING (30 MIN)	Remove cartridge from mailslot.
			REMOVE CARTRIDGE FROM MAILSLLOT	
			FORMAT COMPLETE	
12.		Return to the DRIVE TESTS menu.	13 DRIVE TESTS	
13.		Access the next test.	C.READ/WRITE TEST	
14.		Prepare the test.	INSERT CARTRIDGE [F5] [F4] [-] [F5]	Insert a cartridge into the mailslot
15.		Load the new cartridge.	MEDIA TEST WILL ALTER CARTRIDGE	This message displays briefly.
			ARE YOU SURE ? [-] YES [-] NO	

Step	Press	To...	The LCD displays...	Tips/Notes
16.	<i>any key</i> OR YES	Stop the test. Start the test. The writing portion of the test runs approximately 1 hour.	WRITING ... 1024 OR	Press any key to stop the test.
			READING ... 0 COMPARING 1024 AND THEN	This message displays upon completion of the writing portion of the test.
			REMOVE CARTRIDGE FROM MAILSLLOT THEN TEST PASSED !	This message displays upon completion of the read-back portion of the test.
17.	▲	Access the next test	D.OPEN MAILSLOT	
	✳	Open the mailslot		
18.	▲	Access the next test	E.CLOSE MAILSLOT	
	✳	Close the mailslot		
19.	□	Return to the DRIVE TESTS menu.	13 DRIVE TESTS	

6.6.9 Error Statistics

The Error Statistics menu selection is used to display the occurrence counts of library system errors. For this selection, the LCD displays:

```

18 ERROR STATISTICS
[✳] [□] [▼] [▲]

```

Step	Press	To ...	The LCD displays ...	Tips/Notes
1.		View the error, if any.	<p>- NO ERRORS -</p> <p>-OR-</p> <p>#1 E# NN NNX</p>	<p>Appears if no error has occurred since error statistics were last cleared.</p> <p>#1 = most frequently logged error.</p> <p>E#NN = the error number.</p> <p>NNX = the number of occurrences.</p>
2.	?	Display the actual error message.	ERROR MESSAGE TEXT	
3.		Return to the list of error statistics.		Use or to scroll through the error statistics. Errors display in order from the most frequently to the least frequently logged error.
4.		Display the number of errors listed.	ERRORS LISTED = NN	NN = the total logged errors.
5.	0	Clear all error statistics.		
6.		Return to the Setup menu.		








6.6.10 Error Log

The Error Log menu selection is used to display the library system error log. For this selection, the LCD displays:

```

19 ERROR LOG
[star] [square] [down arrow] [up arrow]

```

Step	Press	To ...	The LCD displays ...	Tips/Notes
1.		View the error log.	<p style="text-align: center;">- NO ERRORS -</p> <p style="text-align: center;">-OR-</p> <p>#1 E# NN LNN POS NN</p> <p style="text-align: center;">-OR-</p> <p>#1 E# NN (DN) LNN</p>	<p>Appears if no error has occurred since error log was last cleared.</p> <p>#1 = most recent error.</p> <p>E# NN = error number.</p> <p>L NN = internal library system firmware location where error occurred.</p> <p>POS NN = lift (tray transport assembly) position when this error occurred.</p> <p>DN = drive at which this error occurred.</p>
2.	?	Display the actual error message.	ERROR MESSAGE TEXT	Use  to display more information about this error.
3.		Return to the error message log.		<p>Use  or  to scroll through the error log.</p> <p>Errors display in order from the most recent to the least recent error.</p>
4.		Clear the error log.	ERRORS LOGGED = N	<i>N</i> = the total number of logged errors.
5.		Return to the Setup menu.		

6.6.11 Event History

The Event History menu selection is used to display the information about selected events which occurred to and in the library system. This information may be useful for service personnel in diagnosing library system problems. For this selection, the LCD displays:

```

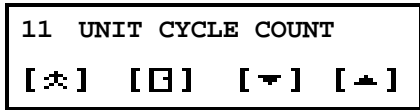
20  EVENT HISTORY
[⌘]  [□]  [←]  [→]
  
```

Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.	⌘	View event history.	EVENT TYPE = 59	Use ← or → to select the desired event type. Changing the event type clears the event history list. Event Type is described in the Plasmon M500 SCSI Software Interface Specification Manual .
2.	⌘	View event type information.	LIST EMPTY -OR- 0001: NN NN NN NN NN	This message displays if no events occurred since the event history list was last cleared. The hexadecimal numbers define SCSI and machine control events to help technical support personnel in the event of an error.
3.	← or →	Scroll the list to the left or right. The first number (0001) is the index of the most recent event.		
4.	□	See the number of logged events.	EVENTS LOGGED = NN	NN = the total number of logged events.

Step	Press	To ...	The LCD Displays ...	Tips/Notes
5.	↵	Clear all event history events.		
6.	□	Return to the Setup menu.		

6.6.12 Unit Cycle Count

The Unit Cycle Count menu selection is used to display the overall library system cycle count. This information is helpful as general information for general preventive maintenance. For this selection, the LCD displays:

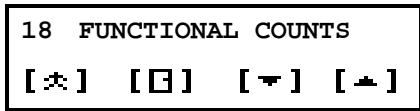






Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.	↵	View the count.	CYCLES = NNNNN	<i>NNNN</i> = the number of times <i>any drive</i> has been loaded.
2.	□	Return to the Setup menu.		

Note: This number displays system usage information and is never cleared.

6.6.13 Functional Counts

The Functional Counts setup command is used to display counts for the movement of the mechanisms within the library system. For this selection, the LCD displays:



Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.		View the information.	LIFT UP/DOWN COUNT	Use + or - to select the desired count.
2.		Display the selected count.	UP/DOWN = NNNN	<i>NNNN</i> = the number of times the tray transport assembly has moved up or down (vertically).
3.		Return to the Functional Counts submenu.	LIFT UP/DOWN COUNT	Repeat these steps for other counts in this submenu.
4.		Return to the Setup menu.		

The following table defines the counts for this menu:

For this count ...	The LCD displays ...
Lift Up/Down	The number of times the tray transport assembly has moved up or down (vertically).
Slider 1 In/Out Slider 2 In/Out	The number of times each picker element has moved in or out (horizontally).
Change Slider	The number of times the active picker has changed. For example, an Exchange Medium command typically requires three picker changes.
Pivot Left/Right	The number of times the MTE has pivoted left or right to reach another column of media or drives.
Mailslot Open	The number of times the mailslot was opened.
Cartridge Flip	The number of times the MTE has flipped.
Cumulative Up/Down Distance	The cumulative distance (in meters) traveled vertically by the MTE.
Cumulative In/Out Distance	The cumulative distance (in meters) traveled horizontally by either slider in the MTE.

For this count ...	The LCD displays ...
Cumulative Left/Right Rotation	The cumulative angular distance (in radians) traveled by the MTE.

Table 7: Functional Count Definitions

6.6.14 Library Configuration Test

To run the configuration test follow the prompts on the display panel.

For this selection the LCD displays:

```

19 LIB CONFIG TESTS
[⌘] [□] [↵] [⏏]

```

Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.	⌘	Begin the test	CHECKING DRIVES	Insert cartridge in mailslot
			THEN	
			READY FOR TEST CARTRIDGE	
			INSERT CARTRIDGE	
			[⌘] [□] [-] [⏏]	
2.	□	Return to the Setup menu.		

6.6.15 Library defaults



To reset the system to the original factory defaults.

The LCD displays:

```

19 LIB CONFIG TESTS
[⌘] [□] [↵] [⏏]

```

Step	Press	To ...	The LCD Displays ...	Tips/Notes
1.		Begin the test	<p>RESTORE DEFAULTS ?</p> <p>YES NO</p>	Will restore all defaults
2.		Return to the Setup menu.		

7. Troubleshooting

The following error codes are provided to assist you in detecting the cause or finding a corrective action for a library system error. Note the error code number on the LCD panel, then find the error number on the error code table below. The table is sorted by error code number.

Error Codes and Corrective Actions

7.1 Error Codes and Locations

Library System Processor Error Codes

Error	Description	Cause / Corrective Action
01h	EPROM 1 Checksum Failure	Fatal error. Replace the Main Controller PWA or install new BIOS. <i>Note: Setup may have to be performed.</i>
02h	SRAM Failure	Fatal error. Replace the Main Controller PWA or install new BIOS. <i>Note: Setup may have to be performed.</i>
04h	Mismatched EPROM's	Fatal error. Replace one or both BIOS EPROM's to ensure compatibility.
05h	EPROM 2 Checksum Failure	Fatal error. Replace the Main Controller PWA or install new BIOS. <i>Note: Setup may have to be performed.</i>
06h	Old Slave Firmware	Fatal error. Replace the Main Controller PWA. <i>Note: Setup may have to be performed.</i>
07h	SCSI Chip Failure	Fatal error. Replace the Main Controller PWA or check SCSI connections.
08h	Import Control Failure	Fatal error. Replace the Main Controller PWA
0Ah	Bad Element Code	Fatal error. Replace the Main Controller PWA.
0Ch	Op Stack Overflow	Fatal error. The Main Controller PWA may need replacement. To recover from this error, reset the Library System by cycling AC power.
0Dh	Bad Op Stack Index	Fatal error. The Main Controller PWA may need replacement. To recover from this error, reset the Library System by cycling AC power.

Library System Hardware Error Codes

Error	Description	Cause / Corrective Action
11h	Slave CPU Communication Failure	Check <ul style="list-style-type: none">• SRAM• EPROMS• Replace Main Controller
12h	Park Lift Failure	Check... <ul style="list-style-type: none">• Is a cartridge projecting from a drive or from the Media Store?
15h	Pivot Cable Error	Check ... <ul style="list-style-type: none">• Pivot interface ribbon cable.
16h	Drive Interface Board Disconnected	Check ... <ul style="list-style-type: none">• Cable at CJ1 on drive interface board.
17h	Lift Cable Error	Check ... <ul style="list-style-type: none">• Lift ribbon cable and connections.• MTE ribbon cable and connections.• Slider ribbon cable and connections.
18h	Main harness (lower) Cable Failure	Check ... <ul style="list-style-type: none">• Main harness lower cable connection at CJ-8 Main Controller PWA.
19h	Main Harness (upper) Cable Failure	Check ... <ul style="list-style-type: none">• Main harness upper cable connection at CJ-1 Main Controller PWA.
1Ah	Drive Not Installed	The unit tried to load an uninstalled drive. Check ... <ul style="list-style-type: none">• Drive interface cable.• Drive state in setup, is drive turned off?• Drive interface cable.
1Bh	Source is Empty	No cartridge was detected in the Storage Element to which the MTE was directed. Check ... <ul style="list-style-type: none">• Store-Media OPTO. Is a disk actually present?• Check SRAM.• Unit may have received a command to move to an element that is truly empty.
1Ch	Destination is Full	A cartridge was detected in the Storage Element to which the MTE was directed. Check ... <ul style="list-style-type: none">• Store-Media OPTO. Is a disk actually present?

Error	Description	Cause / Corrective Action
1Dh	Element Unexpectedly Empty	<ul style="list-style-type: none"> • Check SRAM. • Unit may have received a command to move to an element that is truly full. <p>No cartridge was detected in the Storage Element to which the MTE was directed.</p> <p>Check ...</p> <ul style="list-style-type: none"> • Is a disk actually present? • If running Cycle-2-Disks, you need two cartridges in the Library System. • If running Demonstration, you need three cartridges in the Library System.
1Eh	Element Unexpectedly Full	<p>A cartridge was detected in the Storage Element to which the MTE was directed.</p> <p>Check ...</p> <ul style="list-style-type: none"> • Is a disk actually present? • If running Cycle-2-Disks, you have too many cartridges in the Library System.
1Fh	MTE is Full	<p>A cartridge was detected in the Medium Transport Element preventing the Lift from being positioned.</p> <p>Check ...</p> <ul style="list-style-type: none"> • Is there really a disk in the MTE? • Check SRAM. • Unit may have received a command to move an element into the MTE.
20h	Pick Disk Fail	<p>Check ...</p> <ul style="list-style-type: none"> • Finger Solenoid and connections. • Pivot alignment. • Slider/Flipper Motor and Encoder. • Media-Eject OPTOs. • Lift position offsets in Setup Mode.
21h	Store Disk Fail	<p>Check ...</p> <ul style="list-style-type: none"> • Slider/Flipper Motor and Encoder. • Pivot alignment. • Media-Eject OPTOs. • Lift position offsets in Setup Mode.
22h	Drive cable Disconnected	<p>Check ...</p> <ul style="list-style-type: none"> • Drive Cable connections. • Drive interface PWA.

Error	Description	Cause / Corrective Action
23h	Drive Not Ready	Check ... <ul style="list-style-type: none"> • Drive interface cable. • Drive interface PWA. • SCSI cable connections. • Does drive have power? • Try different media.
24h	Drive Load Fail	Check ... <ul style="list-style-type: none"> • Slider/Flipper Motor and Encoder. • Vertical path sensors. • Is there already a disk in the drive? • Lift position offsets in Setup Mode.
25h	Unload Drive Fail	Check ... <ul style="list-style-type: none"> • Slider/Flipper Motor and Encoder. • Vertical path sensors. • Is there really a disk in the drive? • Lift position offsets in Setup Mode. • Does drive have power?
26h	Eject Fail	Check ... <ul style="list-style-type: none"> • SCSI cable connections. • Does drive have power? • Try different media.
28h	Can't Inquiry Drive	Check ... <ul style="list-style-type: none"> • SCSI cable connections. • Does drive have power?
29h	No Terminator Power	Check ... <ul style="list-style-type: none"> • SCSI cable connections. • SCSI terminator.
2Ah	Incompatible Drive Types	Check ... <ul style="list-style-type: none"> • Drive interface PWA • Drive ID cables. • Drive(s).
2Bh	Cannot Export	Check ... <ul style="list-style-type: none"> • Is the mailslot already occupied? • Import Media sensor and cable.
2Ch	Mailslot is Open	Check ... <ul style="list-style-type: none"> • Is mailslot ajar? • Cable connections to mailslot sensors.

Error	Description	Cause / Corrective Action
2Dh	Medium Removal Prevented	An operation command was made to open or close the import door while in the Prevent state.
2Eh	Unit Not Initialized	An operation command was given prior to unit initialization.
2Fh	Pivot Fail	<p>Check ...</p> <ul style="list-style-type: none"> • Pivot cable. • Pivot alignment sensors and cables. • Lift cable. • Pivot motor and connections. • Is a cartridge projecting from a Storage Element or Drive?
31h	Lift-Home Fail	<p>Check ...</p> <ul style="list-style-type: none"> • Is the Power Supply delivering 24 VDC? • The Slider Mechanism must be 'homed' after initial power-on before the Lift will 'home'. • Press and hold the Lift Brake Release Switch while slowly raising the Lift to the top of its travel. Any obstructions? • Test the Lift Brake (Test Error! Reference source not found. - Motors). • Lift-Home OPTO and flag alignment. • Lift Motor and connections. • Lift Encoder (Test Error! Reference source not found.- Lift Encoder); also, connections. • Is a cartridge projecting from a drive or Storage Element?
32h	Position Fail	<p>Check ...</p> <ul style="list-style-type: none"> • Lift Motor and connections. • Lift Encoder and connections. Run Test Error! Reference source not found.. • Press and hold the Lift Brake Release Switch while slowly raising the Lift to the top of its travel. Any obstructions? • Test the Lift Brake (Test Error! Reference source not found. - Motors). • Is a cartridge projecting from a drive or Storage Element?
33h	Lift Blocked	<p>Check ...</p> <ul style="list-style-type: none"> • Is a cartridge projecting from a drive or Storage Element? • Vertical path sensors and connections.
34h	Pivot Not Aligned	<p>Check ...</p> <ul style="list-style-type: none"> • Pivot sensors. • Pivot motor and connections. • Any obstructions which may be preventing the Pivot Lift from pivoting?

Error	Description	Cause / Corrective Action
35h	Flip Fail	<p>The Flipper Mechanism was unable to flip to the directed side.</p> <p>Check ...</p> <ul style="list-style-type: none"> • Flip Codewheel OPTO and connections. • Flipper Motor and connections; Flipper gears. • Flipper interrupts (Test Error! Reference source not found.). • Any obstructions?
36h	Flip Timeout	<p>The Flipper Mechanism was unable to flip in the allotted time.</p> <p>Check ...</p> <ul style="list-style-type: none"> • Flip Codewheel OPTO and connections. • Flipper Motor and connections; Flipper gears. • Flipper Interrupts (Test Error! Reference source not found.). • Any obstructions?
37h	Flip Align Fail	<p>The Flipper Mechanism was unable to align itself to either side.</p> <p>Check ...</p> <ul style="list-style-type: none"> • Flip Codewheel OPTO and connections. • Flipper Motor and connections; Flipper gears. • Any obstructions?
38h	Flip Not Aligned	<p>The Flipper Mechanism was not aligned at either Side 1 or 2 when the Lift was trying to position or was not aligned after positioning.</p> <p>Check ...</p> <ul style="list-style-type: none"> • Flip Codewheel OPTO and connections. • Flipper Motor and connections; Flipper gears. • Any obstructions causing Flipper misalignment during positioning?
3Ah	Slider Home Fail	<p>Check ...</p> <ul style="list-style-type: none"> • Is power supply delivering 24 VDC? • Slider-Home OPTOs and flag alignment. • Slider Motor and connections. • Slider Encoder and connections • Any obstructions? • Are Fingers catching on anything?
3Bh	Slider Position Fail	<p>Check ...</p> <ul style="list-style-type: none"> • Slider Motor and connections. • Slider Encoder and connections • Any obstructions? • Are Fingers catching on anything?
3Ch	Swap Slider Fail	<p>Check ...</p>

Error	Description	Cause / Corrective Action
3Dh	Slider Load Fail	<ul style="list-style-type: none"> • Slider Motor and connections. • Slider Encoder and connections; run Test Error! Reference source not found.. • Any obstructions? • Are Fingers catching on anything? • Slider Selector Nut operation; run Test Error! Reference source not found..
3Eh	Slider Jammed	<p>Check ...</p> <ul style="list-style-type: none"> • Did cartridge stay in drive after loading? Try a different cartridge. • Any obstructions? • Are Fingers catching on drive bezel? • Is cartridge catching in drive? • Slider Encoder and connections; run Test 21.
3Fh	Slider Mispositioned	<p>Slider is not in a safe position for the Lift to move.</p> <p>Check ...</p> <ul style="list-style-type: none"> • Slider Motor and connections. • Slider Encoder and connections; run Test Error! Reference source not found.. • Any obstructions? • Are Fingers catching on anything? • Slider Selector Nut operation; run Test Error! Reference source not found..
40h	Pivot Align Failure	<p>Slider is not in a safe position for the Lift to move.</p> <p>Check ...</p> <ul style="list-style-type: none"> • Reinitialize unit. • Slider Motor and connections; gears. • Slider Encoder and connections; run Test Error! Reference source not found..
43h	Mailslot Open Fail	<p>Check ...</p> <ul style="list-style-type: none"> • Pivot sensors. • Pivot motor and connections. • Any obstructions which may be preventing the Pivot Lift from pivoting?
44h	MTE Not At Drive	<p>Check ...</p> <ul style="list-style-type: none"> • Mailslot sensor and motor cable connections. • Mailslot opening blocked. <p>The MTE was not positioned in front of the drive during a load or unload attempt.</p>

Error	Description	Cause / Corrective Action
		Check ...
45h	Element Scan Failed	<ul style="list-style-type: none"> Reinitialize unit.
		Check ...
		<ul style="list-style-type: none"> Is the Power Supply delivering 24 VDC? Lift Motor and connections. Lift Encoder (Test Error! Reference source not found. - Lift Encoder); also, connections. Is a cartridge projecting from a drive or Storage Element?
46h	SRAM Reset	Check ...
		<ul style="list-style-type: none"> This is normal if a new Main Controller PWA or SRAM is being powered up for the first time. Power Supply. Was Main Controller powered up without EPROMs. Check SRAM.
4Ah	Front Door is Open	Check ...
		<ul style="list-style-type: none"> Service doors ajar? Interlock switches and connections
51h	Mailslot Home Fail	Check ...
		<ul style="list-style-type: none"> Mailslot motor and sensor connections. Mailslot obstruction.
52h	Mailslot Close Fail	Check ...
		<ul style="list-style-type: none"> Mailslot motor and sensor connections. Mailslot obstruction.
53h	Mailslot Reserved	The mailslot was reserved by the host
		Check ...
		<ul style="list-style-type: none"> Host software state
54h	Bad Drive Type Cable	Check ...
		<ul style="list-style-type: none"> Drive interface cable connections at the drive I/F PWA. Drive interface PWA.
55h	Drive Address Conflict	Check ...
		<ul style="list-style-type: none"> Drive address settings in setup
56h	Overheat (inside temp)	Check ...
		<ul style="list-style-type: none"> Circulating fan operation. Room temperature. Main control board
57h	Mailslot Sensor Fail	Check ...
		<ul style="list-style-type: none"> Mailslot sensors

Error	Description	Cause / Corrective Action
58h	Mailslot Jammed	<ul style="list-style-type: none"> • Main controller board Check ...
59h	Power Supply Fail	<ul style="list-style-type: none"> • Mailslot obstruction Check ... <ul style="list-style-type: none"> • Cables from power supply to drive I/F board. • Power supply fuse. • Power supplies • AC voltage to power supplies. • Drive interface board.
F1h	SCSI Bus Unavailable	Check... <ul style="list-style-type: none"> • SCSI terminators. • Terminator power. • SCSI cable. • Do two different devices have the same SCSI address?
F2h	SCSI SelectionTime Out	Check... <ul style="list-style-type: none"> • SCSI terminators. • Terminator power. • SCSI cable. • Do two different devices have the same SCSI address?
F3h	Two ID's On SCSI Bus	Check... <ul style="list-style-type: none"> • SCSI terminators. • SCSI cable. • Do two different devices have the same SCSI address?
F4h	Undefined SCSI Phase	Check... <ul style="list-style-type: none"> • SCSI terminators. • SCSI cable. • Do two different devices have the same SCSI address?
F5h	SCSI Phase Error	Check... <ul style="list-style-type: none"> • SCSI terminators. • SCSI cable. • Do two different devices have the same SCSI address?
F6h	SCSI Bus Not Terminated	Check... <ul style="list-style-type: none"> • SCSI terminators. • SCSI cable. • Do two different devices have the same SCSI address?
F7h	SCSI Parity Error	Check... <ul style="list-style-type: none"> • Initiator must use parity.

Error	Description	Cause / Corrective Action
F8h	Unexpected Loss of Busy	<ul style="list-style-type: none"> • SCSI terminators. • SCSI cable. • Do two different devices have the same SCSI address? Check...
F9h	Abort Message Received	<ul style="list-style-type: none"> • SCSI terminators. • SCSI cable. • Do two different devices have the same SCSI address? Check...
FAh	Improper Message Received	<ul style="list-style-type: none"> • SCSI host adapter. Check...
FBh	Two Devices Responding to Same Selection	<ul style="list-style-type: none"> • SCSI terminators. • SCSI cable. • Do two different devices have the same SCSI address? Check...
FCh	SCSI Command Time Out	<ul style="list-style-type: none"> • SCSI terminators. • SCSI cable. • Do two different devices have the same SCSI address? Check...
FDh	Host Communication Timeout	<ul style="list-style-type: none"> • SCSI terminators. • Terminator power. • SCSI cable. • Do two different devices have the same SCSI address? Check...
FEh	Drive is Busy	<ul style="list-style-type: none"> • SCSI terminators. • SCSI cable. • Do two different devices have the same SCSI address? Check...
FFh	Cannot Get Sense Info	<ul style="list-style-type: none"> • SCSI terminators. • SCSI cable. • Do two different devices have the same SCSI address? Check...

8. Requirements and Specifications

8.1 Product Certifications

The library system is designed to meet these product certification requirements:

Requirement	Type	Description
Product Certification	Safety	UL 1950 CUL950 IEC 950 EN 60950
	Emissions	FCC Class A CISPR 22 Class A
	Immunity	EN 50082-1 (1992)
Shock and Vibration	Transportation (packaged product)	Shock 10 bottom drops @ 4" (10 cm) (free fall) Random Vibration 1.04 G RMS, 5 - 200 Hz, 15 minutes, 3 Axis
	Operational	Shock 3.5 G peak, half sine, 3.0 ms Vibration 0.1 G RMS
Electrostatic Discharge (ESD)	Operating	+/- 8 KV; No effect on operation

Table 8: Product Certifications

8.2 Site Requirements and Performance Specifications

The following table provides the site requirements and performance specifications for the M-500 Library.

Site Requirement	
Space	<i>Allow 3" behind unit for cabling.</i>
Dimensions and Weights	
Width	37" (94.0 cm)
Height	67.8" (172.2 cm)
Depth	30.5" (77.5 cm)
Weight	550 lbs (250 kg)
Power	
Voltage	100 to 240V AC (autoranging)
Frequency	50/60 Hz
Wattage	220 Watts (750 Btu/Hr)
Environmental	
Operating Temperature	+10 to +40° C (+50 to 104° F)
Non-operating Temperature	-40 to +70° C (-40 to 158° F)
Gradient Temperature	10° C (18° F) per hour
Operating Humidity	20 to 80% RH non-condensing
Non-operating Humidity	5 to 95% RH non condensing
Performance Specifications	
MTTR	30 minutes
MSBF	1,500,000 swap cycles

Table 9: Site Requirements and Performance Specifications

9. Appendices

9.1 Glossary of Terms

Left or Right Front Service Access Panels	The access panels on the library system through which media can be loaded or unloaded, or through which drives are replaced, by qualified service Technicians.
Data Transfer Elements	The MO drives within the library system.
Drive Interface Board	The PWA controlling power to the drives, and assignment of SCSI IDs.
Drive Type	A numeric classification of the type of optical drive installed. This value is encoded in the connector to the drive from the library system drive interface board.
Element	A host addressable location within the library system.
(E)PROM	<i>(Erasable) Programmable Read Only Memory.</i> An integrated circuit chip within the library system containing microcode to control the library.
Event History/Event List	A list of code bytes associated with events occurring within the library system or communication occurring between the library system and an associated host or optical drive. The particular code bytes logged depends upon the value of the event history type. This list is used only for error analysis and debugging.
Export	Moving a cartridge to the mailslot so that the operator may remove it from the library system.
Import	Moving a cartridge from the mailslot so that the operator may introduce a cartridge into the library system.
Mailslot	The operator accessible media slot through which individual cartridges are added to or removed from the library system.
Initiator	A SCSI device, such as a host computer, which issues SCSI commands.
Load	Moving a cartridge into a drive and spinning up the disk in the drive.
Park	To prepare the MTE within the library system for shipment.
Picker	The part of the MTE responsible for pulling or pushing a cartridge. The MTE has 2 pickers.
Pivot	The portion of the library system responsible for rotating the MTE assembly between columns of storage slots and drives.
SCSI	<i>Small Computer System Interface.</i> A specification defining the transfer of commands and data between 2 devices such as a host computer and a computer peripheral. The second version of this specification is known as SCSI-2 and is defined in ANSI X3.131-1994.

SCSI ID

A unique address for each device on a SCSI bus. The host and the medium changer device must each have a SCSI ID between zero and 7, inclusive. The drives must each have a SCSI ID between zero and 7, or between zero and 15 or 31 if Wide SCSI is supported. The host generally has a SCSI ID of 7.

Unload

Ejecting a cartridge from a drive and removing it from the drive.

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