DLT LoaderXpress™

By Overland Data, Inc

Models

LXL4105
LXL4110
LXL7110
LXL8110

Installation and User Manual

P/N 104181-102

Revision A - November 2001

Proprietary Notice

Preface

Purpose of This Manual

This manual provides step-by-step installation instructions, and information required for ongoing use and maintenance of the DLT LoaderXpress tape drive system by Overland Data, Inc. This manual is written for the installer and user of this equipment.

Organization

The following information is contained in this manual:

Chapter 1:	**Introduction** - Provides an introduction to the DLT LoaderXpress by Overland Data, along with a brief description of the benefits, features and tape capacities, drives and lists the models covered in this manual.
Chapter 2:	**Installation** - Presents step-by-step procedures for unpacking and installing the DLT LoaderXpress interface connections and a description of the DLT LoaderXpress configuration options.
Chapter 3:	**Operation** - Describes front panel operations for the DLT LoaderXpress, along with inserting and removing tape cartridges, and tape requirements.
Chapter 4:	**Maintenance** - Describes procedures for using and storing the cleaning cartridge with the DLT LoaderXpress, required slot location, along with running the cleaning cartridge from the front panel, and the Auto Clean mode.
Chapter 5:	**Troubleshooting** - Provides problem diagnosis, error recovery procedures, and Fault Symptom Codes to aid in troubleshooting potential error conditions with DLT LoaderXpress.
Appendix A:	**Specifications** - Contains DLT LoaderXpress, and EMI compliance information.
Appendix B:	**Accessories/Spares/FRUs** - Contains a list of DLT LoaderXpress spare parts and accessories.

Table of Contents

Chapter 1 - Introduction

Chapter 2 - Installation

Table of Contents (Cont'd)

Chapter 3 - Operation

Table of Contents (Cont'd)

Table of Contents (Cont'd)

Table of Contents (Cont'd)

Chapter 3 - Maintenance

Chapter 5 - Troubleshooting

Table of Contents (Cont'd)

Appendix A - Specifications

Appendix B - Accessories/Spares/FRUs

List of Figures

Chapter 1 Introduction

Chapter 2 Installation

Chapter 3 Operation

List of Figures (Cont'd)

Chapter 3 Maintenance

Chapter 5 Troubleshooting

List of Tables

Chapter 1   Introduction

The DLT LoaderXpress™ is a compact, easy-to-use desktop DLT tape loader, designed for secure, reliable unattended system backup. Its robotics design uses Overland Data's Mainframe-Class™ Robotics, known for ruggedness and reliability.

Models and Features

The LoaderXpress is available in four models:

- LXL4105
- LXL4110
- LXL7110
- LXL8110

Features

Feature	LXL4105	LXL4110	LXL7110	LXL8110
Drives	1 DLT4000	1 DLT4000	1 DLT7000	1 DLT8000
Tape Cartridges	5	10	10	10
Tape Capacity	20 GB	20 GB	35 GB	40 GB
Full Magazine with 2:1 Compression	200 GB	400 GB	700 GB	800 GB
Data Transfer Rate (Native)	5.4 GB/hour (1.5 MB/second)		18 GB/hour 5 MB/second	21.6 GB/hour 6 MB/second

Features

Feature	LXL4105	LXL4110	LXL7110	LXL8110
Buffer	2 MB	2 MB	8 MB	8 MB

Physical Configuration

The LoaderXpress is a compact desktop unit with all operating controls on the front panel and power and SCSI connectors on the rear.

Figure 1-1. Front View

Control Panel

The control panel features a display screen, LED indicators, and four buttons. The buttons allow you to select and display operating modes, device status, diagnostic and maintenance functions, device history and error statistics, and system configuration.

Display Screen

Use the display screen to easily see drive and loader status, menu choices and error messages. You can also scroll up and down to access additional information.

Power Supply

The AC Power switch is located on the front panel of the module. The autoranging power supply adjusts automatically to either of two operating voltages (115 VAC and 240 VAC). The power supply operates at 50 or 60 Hz without requiring any modification.

Tape Cartridge Magazine

You can access the tape cartridge magazine through the door at the center of the front panel. The door includes an electronically controlled lock that protects the magazine from tampering or accidental removal.
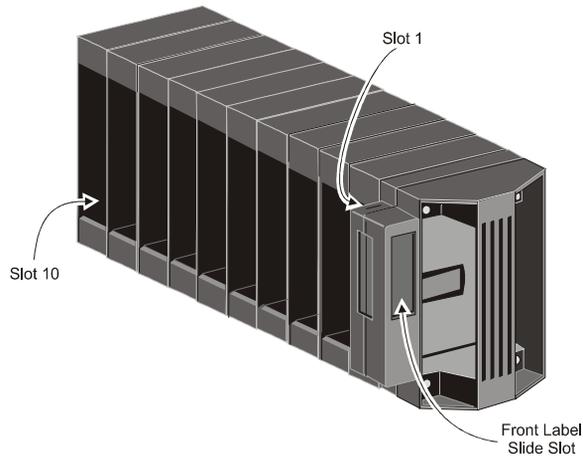
Figure 1-2. 10-Cartridge Magazine

Robotics

The LoaderXpress features robotics that can load any of the cartridges in the magazine into the DLT tape drive. The robotics design uses Overland Data's Mainframe-Class™ Robotics, known for ruggedness and reliability.

Integral Fan Cooling

A single forced-air fan is mounted on the rear panel to provide optimum cooling for critical parts, and to prevent the drive and robotics electronics, motors and power supply from overheating.
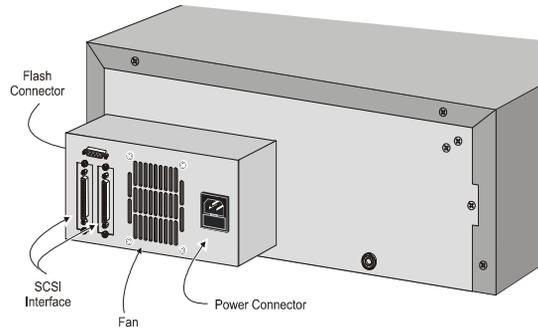
Figure 1-3. Rear View

Advanced Design Features

The LoaderXpress incorporates many significant improvements in tape drive and library design. One of the most important is the use of reliable, high-performance DLT technology, featuring high capacity and long media life.

Embedded Diagnostics

The LoaderXpress provides three levels of embedded diagnostics:

- *Power-On Self Test (POST)* performs verification and memory tests on the processor's host interface and device control functions at power-up.

- *User Diagnostics* help you change configuration options and control cartridge movements manually to help diagnose faults.

- *CE Diagnostics* are used by Customer Engineers for servicing the LoaderXpress.

Error Checking

The DLT drive in the LoaderXpress applies a 16-bit parity check to each record, a 64-bit CRC to each 4kB of data, and Reed-Solomon error correction code overall. In addition, there is an internal parity check on the data buffer.

Capacity

Tape Capacities

Model	Cartridge	Capacity per Cartridge[A]	Full Magazine Compressed[B]
LXL4105	5 - DLT tape IV	20 GB	200 GB
LXL4110	10 - DLT tape IV	20 GB	400 GB
LXL7110	10 - DLT tape IV	35 GB	700 GB
LXL8110	10 - DLT tapeIV	40 GB	800 GB

[A]Native capacities, uncompressed.

[B]Maximum capacities given assume average 2:1 compression.
 Actual compression will vary with file content.

Media Life

The media used in the DLT LoaderXpress is rated by the media manufacturer at over 1,000,000 head passes, and a shelf life of at least 30 years.

Related Publications

For additional information about the LoaderXpress, refer to the following publications:

- *DLT LoaderXpress Service Manual*, P/N 104182-101

- *DLT LibraryXpress SCSI Specification*, P/N 104134-101.

Chapter 2 Installation

There are two major steps to complete installation of the DLT LoaderXpress:

- *Cabling*—Connecting the LoaderXpress to the host interface and terminating the SCSI bus properly, and connecting the appropriate AC power cable.

- *Configuration*—Using the Configure Menu to customize the configuration options to your particular application.

Mechanical Installation

Follow the directions in the shipping container to unpack the LoaderXpress. Save the packing materials for re-use in case you need to return the unit for repairs. There is no user assembly required. Place the LoaderXpress on a stable horizontal surface with at least 2" clearance behind it to allow free flow of cooling air from the fan.

Interfaces and Cabling

The connections required are the SCSI connection to the host, and the AC power connection. The flash connector requires no connection. It is used only for certain servicing and diagnostic purposes.
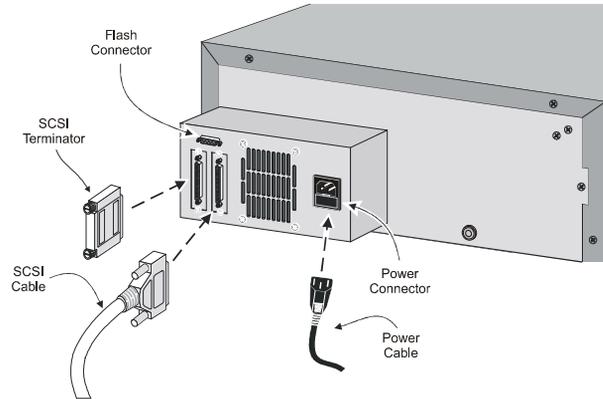
Figure 2-1. Rear Panel Connectors, Terminator and Cables

Power Cable

The AC power cable is a standard grounding AC cable which attaches to an IEC-compatible connector on the rear panel. Connect the cable to the connector on the module, and connect the other end to a reliably grounded AC outlet or rack power outlet.

To maintain product safety compliance, use a power cord with a suitable electrical rating that is approved for the country where the product is used. In the US, use a UL listed cord; in Canada, a CSA certified cord; and in Europe, use a Harmonized cord marked <HAR> or a nationally certified cord.

Interfaces

The LXL4105 and LXL4110 are supplied with a single-ended Fast SCSI-2 interface, and the LXL7110 with a single-ended Fast/Wide SCSI interface. The SCSI-2 interface uses two female 50-pin Centronics-type connectors. SCSI-2 cables and terminators are secured to the connectors by spring clips. The Fast/Wide SCSI interface uses high-density 68-pin connectors. Fast/Wide SCSI cables and terminators are secured to the connectors by jackscrews.

The drive and the robotics are separate SCSI devices. Each requires a unique SCSI address, because they are daisy-chained on the same bus.

A terminator of the proper type (single-ended, not differential) must be installed at the end of the bus, as explained below in the section headed Interface Cable and Terminator Installation.

In order to connect the module to a host computer system, the host system must have a compatible SCSI controller and the appropriate driver software. Your Technical Support representative is available to answer your questions about installation procedures for specific host systems.

Before cabling the system, see the recommended SCSI cable specifications in the following section, Also, see the section on Interface Cable and Terminator Installation later in this chapter.

Interface Cable Specifications

The detailed requirements for SCSI cables are set forth in ANSI X3.131-1994. All SCSI cables used with the DLT LoaderXpress should meet the following requirements:

- Shielded or double-shielded, as required to meet EMI specifications

- Impedance match with cable terminators of 132 ohms

- Characteristic impedance between 90 and 132 ohms (required)

- 25-pair twisted-pair (LXL4105 and LXL4110) or 34-pair twisted-pair (LXL7110)

- Each end of twisted pair ground must be connected to chassis ground

- The maximum cable length for a *single-ended* SCSI bus is 10 feet (3 m) for all LoaderXpress models. When calculating the overall length of the bus, be sure to include the internal cabling of the module, which is 27 inches (0.7 m) for all models.

- Cables of different impedances should not be used together.

Additional specifications to assure the highest SCSI performance can be found in ANSI X3.131-1994 or later.

> **NOTE:** This equipment has been tested for electromagnetic emissions and immunity using good quality shielded cables. The use of unshielded cables, poor quality cables or other variances from good practice may result in non-compliance with national and international rules.

Interface Cable and Terminator Installation

The appropriate type of terminator is shipped with your module. It is packaged in the accessory bag that arrives with the module. *Note:* It is important to use only single-ended terminators on a single-ended SCSI bus.

A terminator must be installed on the device if the device is to be used at either end of a SCSI bus, such as the first or last device along a daisy-chain, or as a single SCSI peripheral. Usually, the SCSI interface in the host computer is the first device on the bus, so the question is whether the LoaderXpress or another device is the last device on the bus.

In the interest of clarity, let us assume that the incoming SCSI bus will be connected to the right SCSI connector, and that the terminator or the outgoing SCSI bus will be connected to the left SCSI connector.

To properly cable the drive:

1) Make sure that your host system has appropriate SCSI interface card or cards and software drivers installed. Consider 1) whether the interface card is single-ended or differential, 2) whether it is SCSI-2 or Fast/Wide SCSI, and 3) if it is SCSI-2, whether it uses a low-density or a high-density 50-pin connector. All models of the LoaderXpress require a single-ended interface. Models LXL4105 and LXL4110 require a SCSI-2 interface; the LXL7110 requires a Fast/Wide interface. Some SCSI-2 interface cards use a 50-pin high-density connector. There are adapter cables available for connecting an interface card with a high-density 50-pin connector to the low-density connector used on the LXL4105 and LXL4110.

2) Inspect the terminator and assure that it is a single-ended type, to match your system. SCSI terminators are usually clearly marked *single-ended* or *differential*.

3) If the LoaderXpress is the only SCSI device you want to connect to the interface card, simply connect the cable from the interface card to the incoming SCSI connector, attach the terminator to the outgoing SCSI connector, then skip to step 5.

4) If you have one or more additional SCSI devices to connect to the interface card, your LoaderXpress must be connected in daisy-chain fashion. That means that the cable from the interface card must be connected to the incoming SCSI connector of the first SCSI device, the cable from the outgoing connector of the first device must be connected to the incoming connector of the second SCSI device, and so on. You can connect them in any order. The terminator must be attached to the outgoing SCSI connector of the last device in the chain.

5) Make sure that each cable you use meets the specifications listed earlier in this chapter.

6) Be sure that the length of the entire SCSI bus falls below the maximum permissible length given in the section on SCSI cable specifications, including the internal SCSI wiring of all the SCSI devices. The internal wiring of the LoaderXpress is 27 inches (69 cm). Refer to the manuals for the other SCSI devices to determine their internal SCSI bus lengths.

Configuration

The LoaderXpress is designed with many configuration options, each offering multiple settings to support a variety of applications and platforms. The setting of each option is stored in non-volatile memory in the module. For most applications, you will not

need to change the factory default settings. If you need to change the configuration, go on to the next section. If you are uncertain whether you need to change a setting, contact your Technical Support representative.

To change settings, use the Control Panel. For an overview of how the Control Panel works, and a description of the buttons, indicators and display functions, refer to *"Entering the Menu Mode"*, *"Exiting the Menu Mode"*, and *"Navigating Through the Menu Structure"* in *Chapter 3 - Operation*.

To change the settings, use the procedure described in the following example. Consult your host system documentation to determine which settings may need to be changed.

A Configuration Example - Setting the SCSI ID

To set the SCSI ID:

1) Turn the module on, and wait until the Power-On Self Test terminates and the default screen appears on the display. The following illustration shows the default screen for the LXL4110 and the LXL7110. The LXL4105 displays five slots on line 4 instead of the 10 shown in the following screen. This figure shows a magazine with only one cartridge, in slot 1. On your default screen, you will see rectangles on line three in positions that correspond to the slots where cartridges are present

```
No DLT1 Tape
Loader Idle

1 ▶ ■ _ _ _ _ _ _ _ _ ◀10
```

Figure 2-2. Default Screen

2) At the Default Screen, press the Enter button. The display will show the Main Menu, as in the following screen:

```
▶Load/Unload
 Remove Magazine
 Maintenance Menu
 Configure Menu            ↓
```

Figure 2-3. Main Menu

1) Press the scroll down button (▼) four times to move the ▶ to Configure Menu, then press the Enter button. The display will show the Configure submenu, as shown in the following screen. Note that the arrow ↓ at the end of the fourth line means that there are additional configuration options that can be reached by scrolling with the button.

```
  Set Dat Format
▶ Set SCSI
  Set Library Mode
  Set Element Base          ↓
```
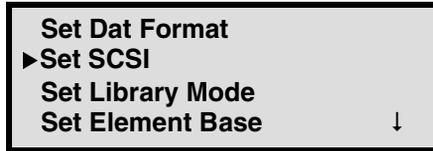
Figure 2-4. Configure Submenu

2) To select a configuration option, press the scroll up (▲) or scroll down (▼) button on the control panel until the arrow on the display is next to the option you want to change. In this case, choose Set SCSI. Press the Enter button to display the choices for that option. The following submenu displays:

```
▶ Library Parity
  *Enabled
  Library Bus ID:
  *6                        ↓
```
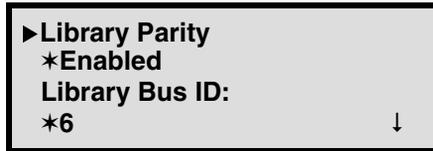
Figure 2-5. Configure Submenu

NOTE: Take a moment to look closely at the submenu. Note that the ▶ on the display is next to line 1, *and* that line 2 is indented. This tells you that this is a *two-tiered menu*. The ▲ and ▼ buttons work on two levels in this kind of menu, which is typical of many submenus of the Configure Menu. The first level is as follows: If you press ▼, the ▶ moves to line 3. Pressing ▼ again will scroll down to DLT Bus ID. If you press ▲, the ▶ moves back to line 1.

1) Note that the Library SCSI ID is set to 6. Suppose you want to set the DLT1 bus ID to 5. With the ▶ next to line 1, press the ▼ repeatedly until the display scrolls as shown in the following screen:

```
  Library Bus ID:
  *6
▶ DLT1 Bus ID:
  *4                        ↓
```
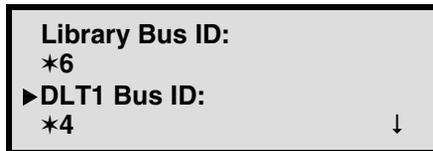
Figure 2-6. Configure Submenu (DLT Bus ID)

With the ▶ next to line 3, press the Enter button. The ▶ moves to line 4, the ↑ appears at the end of line 1, and the ↓ appears at the end of line 4. Now you can use the up ▲ and down ▼ arrow buttons to scroll line 4 to display the possible settings. Scroll so that 5 is displayed, then press the Enter button to save the new selection. An * appears at the left of the 5 to indicate that it is the current selection.

1) Press the Escape button repeatedly until the submenu reappears.

2) Repeat this procedure for each configuration option you want to change.

Setting Up Reserved Slots

Some host software limits the size of tape magazines for licensing purposes, and will not operate with a library that exceeds the licensed size. This configuration option enables you to withdraw some of the slots in the LoaderXpress from use as storage slots in order to meet the software licensing requirements. One of the reserved slots can be used for a cleaning cartridge in order to use the Autoclean function.

To set up a Reserved Slot:

1) As shown in the following screens, navigate from the Default Screen through the Main Menu to the Configure Submenu.

2) Scroll down the Configure Submenu and select Set Reserved Slots. The following screen displays

> ▶**Reserved Slots:**
> *0

Figure 2-7. Configure Submenu (DLT Bus ID)

1) With the ▶ next to line 1, press the Enter button. The ▶ moves to line 2, an ↓ appears at the end of line 4, and a ↑ appears at the end of line 1. Use the up ▲and ▼to scroll line 2 to specify the number of slots to be reserved. Scroll to the desired number, then press the Enter button to save the new selection.

For example, if you have an LXL4110 or LXL7110 and have a seven-slot software license, you must reserve 10 less seven, or three slots. Any of the reserved slots may be used to store a cleaning cartridge. See *Chapter 4 - Maintenance* for information on installing, using and removing a cleaning cartridge.

2) Press the Escape button repeatedly to return to the Default Screen.

Descriptions of Configuration Options

The items available on the Configuration Menu are as follows:

Set Data Format: This setting enables you to 1) set the data format to Auto, Selection, THZ01, THZ02, DLT2000, DLT2000XT, DLT4000 or DLT7000; and 2) enable or disable data compression. Compression can not be enabled when either THZ01 or THZ02 format is in use. This setting applies to the next or the currently loaded cartridge only. An unload command returns to the default. This setting does not display the format of the loaded tape. Use the Show Status Menu for this purpose. The defaults are Auto Selection for both density and compression.

Set SCSI: This setting enables you to 1) enable or disable the robotics SCSI bus parity checking, and 2) set the SCSI addresses of the drives and the robotics. The defaults are: parity on; DLT 1 Bus ID = 4; Library Bus ID = 6.

Set Library Mode: This setting enables you to set the robotics operating mode to Random or Sequential DLT1. Random is the normal operating mode which affords complete host control of the robotics. The Sequential modes are locally controlled modes. Sequential DLT1 begins with any cartridge loaded into DLT1. The LoaderXpress monitors the status of DLT1, and when the cartridge is unloaded by the host, it loads the next cartridge in magazine numerical order. This operation continues to cycle until all of the cartridges have been loaded, or until an empty slot is encountered. The default is Random.

When you select Sequential DLT1, an additional Sequential Mode option is displayed that lets you select Normal or Recirculate options. Normal option operated as described above. In Recirculate mode, instead of stopping after the cartridge in the last slot has been unloaded by the host, the operation continues by loading the cartridge in Slot 1. Recirculation will continue until an empty slot is encountered. The default for Sequential Mode is Normal.

Set Element Base: This setting allows you to set the base addresses of each of the three SCSI *elements* of the module. In order to identify sources and destinations in SCSI commands to the robotics, the LoaderXpress is divided into elements, each of which is assigned a separate designator or *element addres*s. The *Transport Element* is the robotics mechanism itself; the *Storage Elements* are the ten slots in the magazine; the *Transfer Element* is the drive. The LoaderXpress reports these settings in response to the SCSI Mode Sense command, in the Element Address Assignment Page. The defaults are Transport = 0000; Storage element base = 0001; Transfer element base = 00F0 (DLT 1).

Set Identification: This setting enables you to specify the response of the LoaderXpress's robotics to the SCSI Inquiry command in the Vendor ID and the Product ID fields. The defaults are: Vender ID = OVERLAND; Product ID -LXB.

Set Date: Enables you to set the module's calendar.

Set Time: Enables you to set the module's clock.

Set Baud Rate: Enables you to set the data transmission rate of the module's trace port. This function is intended for use by CEs only. The default is 38400 bits/sec.

Set Serial number: This setting enables you to alter the LoaderXpress's serial number as stored in the unit. The LoaderXpress's robotics reports these settings in response to the SCSI Inquiry command, in the Unit Serial Number Page.

Set Unload Mode: This setting determines whether a SCSI Move Medium command is interpreted as implicit or explicit. If implicit, the module unloads a drive before attempting to move a cartridge from that drive. If explicit, the host must issue a SCSI Unload command to a drive before each Move Medium command that removes a cartridge from that drive. The default is Implicit.

Set Autoclean Mode: This setting allows you to enable an automatic cleaning cycle which operates as part of the cartridge unload sequence whenever the Use Cleaner LED comes on. To use this option, you must reserve a slot for a cleaning cartridge using the Reserve Slots option. The default is Disabled.

Set Negotiation: This option offers two choices: Initiate Synchronous Negotiation and Set Transfer Rate. Initiate Negotiate, if set, allows the LoaderXpress to initiate SCSI Synchronous Negotiation with the host (the default is No). The LoaderXpress always responds to host-initiated negotiation.

Set Transfer Rate can be set to 10 Mbytes/sec, 5 Mbytes/sec or Asynchronous. the default is 10 Mbytes/sec.

Set Reserved Slots: Some host software imposes size limits on tape magazines for licensing purposes, and will not operate with a library that exceeds the licensed size. This setting enables you to withdraw from use a specified number of the slots in the magazine. At least one reserved slot is required in order to use the Autoclean option.

Set Special Configuration: This option serves multiple functions. It allows you to do the following:

- Choose between two lengths of the Mode Sense/Select Device Capabilities Page (SCSI Page 1Fh), which are 14 bytes and 18 bytes, to accommodate different SCSI device implementations of this page. The default is Short.

- Change the model number information displayed on the initial screens. You can choose between OVERLAND 'LX - - - - - -,' a blank line, DIGITAL TL80X, and a vendor unique designator. The default is 'OVERLAND LX - - - - -.'

- Set the module to report Good status in response to a SCSI Test Unit Ready command when the module is in the Sequential Mode. Ordinarily, the module returns Not Ready status when in the Sequential Mode. This is needed because some software is unable to issue a Mode Select command to terminate Sequential Mode when the TUR command returns Not Ready. Possible settings are Custom, which returns Good when in Sequential Mode, and Standard, which returns Not Ready in Sequential Mode. The default is Standard.

- Specify the module's response to the SCSI Initialize Element Status command. The possible settings are No Inventory, Force Inventory, and Force Label Scan. The default is No Inventory.

- Specify the format of the Unit Attention report. If set to All, the unit reports all unit attention conditions in sequence; if set to One, the unit reports only the highest priority condition.

- Specify whether the display of each SCSI elements in the unit to begins with either zero or one. This affects *only* the front panel display, not the actual SCSI element addresses.

- Limit the length of the bar code label reported in the response to the SCSI Read Element Status command. It does *not* affect the front panel Bar Info display of bar code label contents. This option is to accommodate software that requires that bar code labels be less than eight characters in length. The possible settings are 1 through 8. The default is 8.

- Set the alignment of the bar code label information reported in the response to the SCSI Read Element Status command. The settings are Left and Right. When used in conjunction with the label size option above, it can strip unwanted trailing characters (Left alignment) or unwanted leading characters (Right alignment). The default is Left alignment.

- Specify the module's response if it receives a SCSI Reset or Abort command while a Move Medium command is in progress. Depending on this setting, during execution of the Move Medium command, the module will return either Busy or Not Ready in response to the SCSI Reset or Abort commands. The default is a Busy response.

- Has no effect on the LoaderXpress models.

Set Default: This option resets all of the preceding configuration options to their factory defaults.

The following table summarizes the configuration settings for the LoaderXpress. The default settings are shown in the third column. Other possible settings are shown in the second column.

Table 2-1 DLT LoaderXpress Configuration Options

Option	Settings	Default
Data Format	**Density**: THZ01, THZ02, DLT2000, DLT2000XT, DLT4000, DLT7000, Auto Selection **Compression**: Enable, Disable (Enable at 10.0 only)	Auto Disabled
SCSI	**Lib Bus Parity**: Enable, Disable **Lib Bus ID**: (SCSI ID) **DLT1 Bus ID**: (SCSI ID)	Enabled 6 4
Library Mode	Random, Seq. DLT1 **Sequential Mode**: Normal, Recirculate	Random Normal

Table 2-1 DLT LoaderXpress Configuration Options (Continued)

Option	Settings	Default
Element Base	**Transport**: NNNN (hex) **Storage**: NNNN (hex) **Transfer**: NNNN (hex)	0000 0001 00F0
Identification	**Vendor ID**: OVERLAND EXABYTE, DEC, Quantum, Vendor Unique **Product ID**: LXB, LXG, LXS, EXB-210, EXB-440, EXB-480, TZ Media Changer, TL800 (c)DEC. Vendor Unique	OVERLAND LXB
Date	DD, MMM, YYYY	Current Date
Time	HH, MM	Current Time
Baud Rate	[Overland CE Use Only]	38400
Serial Number	NXNNNNNNN	999999999
Unload Mode	Implicit, Explicit	Implicit
AutoClean Mode	Disabled, Enabled	Disabled
Negotiation	**Negotiation Mode**: Do Not Initiate, Initiate **Transfer Rate**: 10 MB/sec, 5 MB/sec, Asynchronous	Do Not Initiate 10 MB/sec
Reserved Slots	**Reserved Slots**: 0 through *n*	0

Table 2-1 DLT LoaderXpress Configuration Options (Continued)

Option	Settings	Default
Special Config	**Mode Page 1F Length**: Short (0x0E), Long (0x12)	Short
	Model Number: OVERLAND LX, Blank Line, DIGITAL TL89x, Vendor Unique	OVERLAND LX
	TUR Reporting: Standard: report Not Ready; Custom: report Good in Sequential Mode	Standard
	Init. Elem. Status: No Inventory, Force Inventory, Force Label Scan	No Inventory
	Unit Attn. Report: One, All	
	Element Base: One Based, Zero Based	All
		One Based
	Label Size: 1 through 8 characters	8 Chars
	Label Alignment: Left Align, Right Align	Left
	Abort Move Status: Busy, Not Ready	Busy
Default	ODI Defaults, DEC Defaults	ODI Defaults

NOTE: The options described in this table represent the version of the firmware in use when this manual was written. If the options displayed on your control panel differ from those described here, you can download the latest option descriptions from the Overland Data web site listed on page ii or contact your Technical Support representative.

Chapter 3 Operation

This chapter describes the LoaderXpress front panel and its components, including display messages and screens, and selecting control panel display modes, including using the menus.

Front Panel

The front panel includes the power switch, the magazine door, and the control panel which has buttons, a display and indicators.

Figure 3-1. Front Panel

Power Switch

The power switch controls the supply of AC power to the LoaderXpress. It is a push-on, push-off switch. When the power is on, the backplane of the control panel display is illuminated.

Control Panel

The control panel consists of four LED indicators, a 4-line by 20-character backlit LCD display, and four buttons.
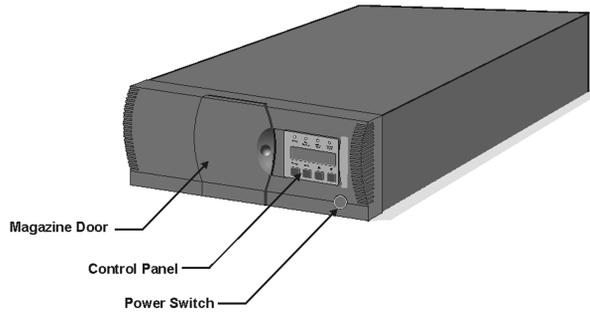
Figure 3-2. Control Panel

Indicators

There are four LED indicators on the control panel: **Ready** (green), **Use Cleaner** (yellow), **Drive Fault** (red), and **Loader Fault** (red).

The **Ready** indicator (green) is illuminated when the LoaderXpress is ready to accept commands, either from the Control Panel or from the host computer. The **Ready** indicator goes out when you enter the Menu Mode.

The **Use Cleaner** LED (yellow) indicates that the drive requires cleaning. The cleaning operation is described in *Chapter 4 — Maintenance.*

When either the **Drive Fault** or the **Loader Fault** LED (red) is illuminated, a Fault Screen appears on the LCD display. The Fault Screen is described later in this chapter.

Buttons

There are four buttons on the control panel: **Escape, Enter**, ▲ and ▼. Use the buttons to navigate from the Default Screen through a multi-level menu structure. Select options using the **Enter** button.

- To enter the Menu Mode and display the Main Menu from the Default Screen, press **Enter**.

- To return to the Main Menu from a submenu, press **Escape** repeatedly until the Main Menu appears. Pressing **Escape** while the Main Menu is displayed exits the Menu Mode and returns you to the Default Screen.

- To display the Show Status Menu *only* without entering the Menu Mode, press **Escape** at the Default Screen. The system remains online.

NOTE: When you enter the Menu Mode, the **Ready** light goes out. This means that the module is *off-line*, and the system responds to all commands from the host with a SCSI *Not Ready* until you exit the Menu Mode and the **Ready** light goes on.

Figure 3-3. Control Panel Buttons

Table 3-1 Control Panel Button Functions

Screen	Escape	Enter	▲	▼
At Post Screen	N/A	N/A	N/A	N/A
At Default Screen	Displays Show Status Menu	Enters Menu Mode	N/A	N/A
At Status Menu (while online)	Returns to Default Screen	Same as in Menu Mode	Same as in Menu Mode	Same as in Menu Mode
In Menu Mode	Rejects currently displayed choice or Aborts Control Panel operation in progress, or Exits to next higher menu level, or Exits Menu Mode to default screen	Accepts currently displayed choice	Moves ▶ one line upward through list of options, or Scrolls part of display one line toward top of list of options	Moves ▶ one line downward through list of options, or Scrolls part of display one line toward bottom of list of options
At Fault Screen	N/A	Clears Soft Errors	N/A	N/A

Using the Auto Repeat Feature

If you press either the ▲ and ▼ button for more than one-half second, the control panel behaves as if you were pressing and releasing the button about four times per second. This effect stops when you release the button.

Front Panel and Media Locks

To avoid accidental interruption of module operation by entering the Menu Mode while the host is accessing the module, you can lock the control panel electronically from the Security Menu, described later in this chapter. Once you lock the control panel, you must use an unlock code to enter the Menu Mode. See *"Navigating Through the Menu Structure"* later in this chapter.

Lock the media with the host software, using the SCSI Allow/Prevent Medium Removal command. The LoaderXpress provides no control panel override for this command. Exiting the host software usually restores media access. If the host fails, you can restore media access by cycling LoaderXpress power.

Display Messages

The display on the control panel is capable of displaying four lines of 20 characters each, to allow the use of easy-to-understand messages. Many of these messages and their functions are described in this chapter. Those displays that are described in other chapters are also cross-referenced here.

Power-On Self Test Screen

When power is first applied to the module, a series of power-on self test (POST) diagnostics is performed. During POST execution, the model number of the module, the current date and time, the firmware revision, and the status or result of the test in progress are displayed on the control panel as shown in the following screen

> **Overland LXL8110**
> **Firmware Level**
> **Checking Hardware**

Figure 3-4. POST Screen

Initialization Screens

After the POST is completed, the library robotics system begins its initialization. A series of screens similar to the following display during this process.

```
Overland LXL8110
Firmware Level
Initializing Loader
26-May-2001 14:22:38
```
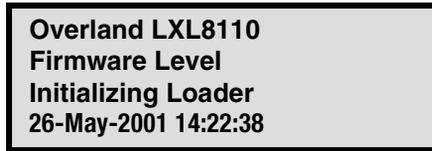
Figure 3-5. Initialization Screen

Default Screen

After the POST diagnostics have concluded successfully and initialization is complete, the default screen displays

```
DLT No Tape
Loader Idle
1 ▶_ _ _ _ _ _ _ _ ◀10
```

Figure 3-6. Default Screen

:The first line of the Default Screen shows the status of the DLT drive within the LoaderXpress. Possible status conditions of the drive are:

- No Tape
- Idle
- Rewinding
- Seeking
- Reading
- Writing
- Erasing
- Cleaning
- Unloaded
- Loading

- Unloading
- Calibrating.

The display's second line displays possible status conditions of the library robotics:

- Loader Idle
- Fetch
- Stow
- Diag Active
- Diag Complete
- Taking Inventory
- Elevator Home
- Checking Drive(s)
- Orphaned Cartridge
- Trapped Cartridge
- Scanning Labels.

The third line represents a map of the magazine. A 10-slot magazine is shown. The number 1 shows the location of slot 1 (the front slot) in the map. The number 10 shows the location of slot 10 (the rear slot) in the map. Where a rectangle appears on this line, it indicates that a cartridge is present in the corresponding slot of the magazine. An underline means that there is no cartridge present in that slot.

Fault Screen

When a fault is detected, a screen similar to the following appears. At the same time, either the Drive Fault or the Loader Fault LED lights up

```
Fault Code: XXXX
Error Decription
ERP Line 1
ERP Line 2
```
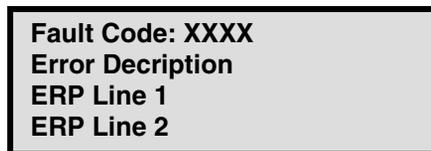
Figure 3-7. Fault Screen

.The first line displays a numerical fault symptom code (FSC). The second line displays a brief description of the error. The third and fourth lines display the error recovery procedure (ERP). Refer to *Chapter 5 - Troubleshooting* for a list of fault system codes.

Selecting Control Panel Display Modes

As previously described, the POST Screens, the Initialization Screen and the Default Screen appear without operator or host intervention. The Fault Screens appear whenever a fault occurs. The screens which follow appear in response to operator actions.

The LoaderXpress Menu Structure

The following illustration shows the structure of the LoaderXpress menus.
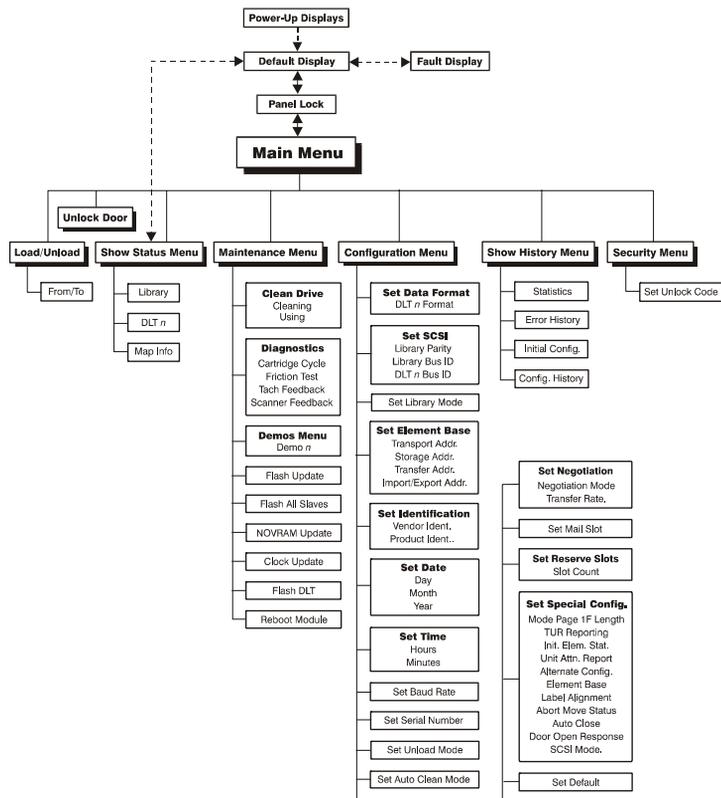
Figure 3-8. LoaderXpress Menu Structure

Entering the Menu Mode

When you press the **Enter** button to enter the Menu Mode, the **Ready** light goes out. This means that the module is *offline*, and the module responds to all SCSI commands from the host by reporting Not Ready until you exit the Menu Mode and the **Read**y light goes on.
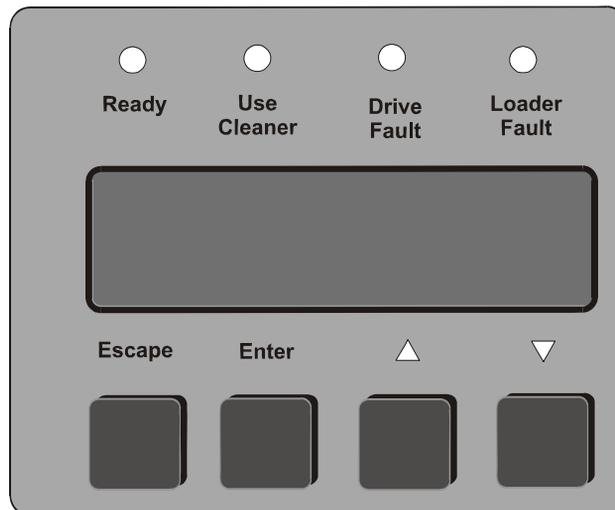
To prevent inadvertent interruption of host operations, you can lock out the Menu Mode using the Security Menu. See *Security Menu* later in this chapter. When the control panel is locked, you must enter your unlock code in order to display the Main Menu. You can access the Show Status Menu at any time, however, from the Default Screen by pressing the **Escape** button.

When the Default Screen appears on the screen, you can enter the Menu Mode by pressing **Enter**. The Main Menu displays:

```
▶Load/Unload
 Unlock Door
 Show Status Menu
 Maintenance Menu
```
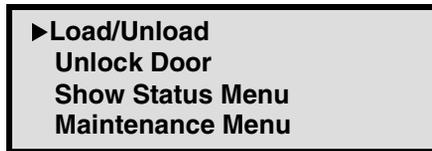
Figure 3-9. Main Menu

NOTE: If the Control Panel is locked, the following screen displays.You must know the unlock code for your LoaderXpress before you can proceed. If you do not know the code, contact your system administrator

```
Front Panel Locked

 ENTER to Unlock
 ESCAPE to Exit
```

Figure 3-10. Security Menu

When you press **Enter**, the following screen displays

```
┌─────────────────────────────────┐
│  Unlock Code                    │
│     " "                         │
│                                 │
│                                 │
└─────────────────────────────────┘
```

Figure 3-11. Unlock Screen

:Using the ▲ and the ▼ buttons, set the first digit of the unlock code. When you have set it, press **Enter** to move the cursor to the second digit and repeat the process. When you have finished, press **Escape**, then **Enter** to confirm your entry. If the code is correct, the Main Menu is displayed. If the code is incorrect, an error screen appears.

Exiting the Menu Mode

To leave the menu mode and return to the Default Screen, press **Escape** repeatedly. Each time you press **Escape**, the display moves to a higher menu level. When the Main Menu is visible, pressing **Escape** once returns to the Default Screen.

NOTE: An ↑ on line 1 or a ↓ on line 4 indicates that you can scroll up or down to display and select more choices.

Navigating Through the Menu Structure

To select a submenu, move the ▶ on the display to the desired line using the ▲ and ▼ buttons. Press **Enter** to confirm your choice and display the submenu.

The items available on the Main Menu are:

- Load/Unload
- Unlock Door
- Show Status Menu
- Maintenance Menu
- Configure Menu
- Show History Menu
- Security Menu.

Load/Unload Menu

See *"Loading and Unloading Tapes"* later in the chapter.

Unlock Door

When you scroll to Unlock Door and press **Enter**, the magazine door swings open.

> **NOTE:** If the message Magazine Locked appears on the screen, the host software has locked the magazine. Usually, exiting your backup or host software releases the lock. In the event of host failure, you can cycle power to the LoaderXpress to release the lock.

Show Status Menu

> **NOTE:** You can select the Show Status submenu directly from the Default Screen without entering the Menu Mode by pressing **Escape**. In this way, you can check status at any time without interrupting host operations.

When you select Show Status, either from the Main Menu or from the Default Screen, the following screen displays

```
Library
DLT 1
 Map Info
```

Figure 3-12. Show Status Screen

The items available on the Show Status menu are:

- Library
- DLT1
- Map Info.

Move the ▶ up or down with the ▲ and ▼ buttons and press **Enter** to select the item.

Library Status Submenu

When you select Library, the following submenu displays

```
Model Number:
OVERLAND LXL8110
 Firmware Revision:
```
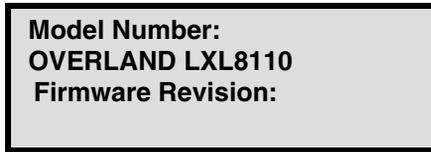
Figure 3-13. Library Status Submenu

Scroll this screen to select one of the following categories:

- Model Number
- Firmware Revision
- Date
- Time
- Loader Status
- Autoclean Mode
- Library Mode
- Library Configuration
- Vendor Identification
- Product Identification
- Transport Address
- Storage Address
- Transfer Address
- Serial Number
- Wide SCSI
- SCSI Bus ID
- SCSI Bus Parity
- Negotiation Mode
- Transfer Rate
- Unload Mode
- Reserved Slots
- Mode Page 1F Length
- TUR Reporting
- Init Element Status
- Boot Version
- Flash Type

- Baud Rate
- Bar Code Reader
- Label Size/Alignment
- Abort Move Status.

Drive Status Submenu

When you select the drive, the following submenu displays:

```
Tape Motion:
  Idle
Product Type:
  DLT XXXX                    ↓
```
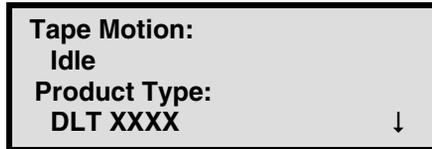
Figure 3-14. Drive Status Submenu

The drive model number displays on Line 4 (DLTXXXX). You can scroll through the following list of Drive Status categories:

- Tape Motion
- Product Type
- Tape Format
- Compression
- SCSI Bus ID
- Drive Revision
- Controller Revision
- Cartridge Present
- Hardware Error
- Cleaning Needed
- Write Protected
- Operate Handle
- Drive Serial No.

Map Information Screen

When you select Map Info, a screen similar to the following displays. The location of the element being reported displays on line 1.

```
Location                    ↑
Element Status
Label Status
XXXXXXXX                    ↓
```
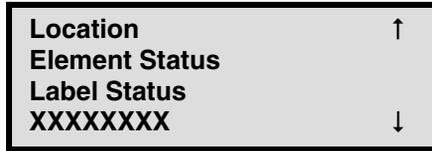
Figure 3-15. Drive Status Submenu

Lines 1, 2, 3, and 4 of this screen are scrollable in unison. For each scroll position, line 1 displays one of the following locations

- DLT1
- Slot1
- Slot2
- Slot3
- Slot4
- Slot5
- Slot6
- Slot7
- Slot8
- Slot9
- Slot10

If your host software license permits fewer slots than your magazine, and if you have designated reserved slots in accordance with that license or to use the Autoclean mode, a lesser number of slots displays. The procedure for designating reserved slots is described in *Chapter 2 - Installation*.

Depending on the presence or absence of a cartridge in the element being reported, line 2 displays either *Empty* or *Occupied*.

Depending on the report for each location, line 3 displays either *Label Valid* or *Label Not Present*.

For each location reported, line 4 displays actual bar code on the label, up to 8 characters. If there is no label, or if there is no bar code reader installed, line 4 is blank.

Maintenance Menu

The Maintenance Menu and the options under it that are intended for operator use are described in *Chapter 3 - Maintenance*. Additional options on the Maintenance Menu that are intended for use by service personnel are described in the Service Manual.

Configure Menu

The Configure Menu, how to use it and the options available under it are described in *Chapter 2 - Installation*.

Show History Menu

The Show History Menu allows you to review the history of the module. (See *"Displaying Error Logs"* later in this chapter.) You can retrieve the configuration history, the original configuration, as well as statistics on the number of operations the library robotics and the drives have performed.

Security Menu

The Security Menu allows you to lock the control panel, preventing inadvertent or unauthorized access to the Menu Mode, which takes the LoaderXpress offline.

When the control panel is locked, you cannot open the magazine door.

You can display the Status Menu without unlocking the control panel by pressing **Escape** at the Default Screen.

When you select the Security Menu, the following screen displays:

Set Unlock Code
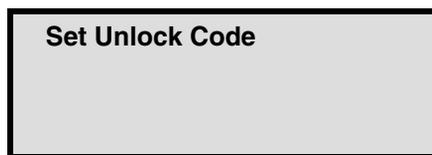
Figure 3-16. Security Menu

Press **Enter**. The following screen displays:

```
Unlock Code                    ↑
 *0000

0000 Disables Lock             ↓
```

Figure 3-17. Code Select Submenu

An underline cursor appears underneath the first digit. To set the first digit, press the ▲ button or the ▼ button until the desired number is displayed. To move the cursor to the second digit, press **Enter**. Repeat the process for each of the four digits. Be sure to remember the 4-digit number, which you will need in order to enter the Menu Mode. An unlock code of 0000 disables control panel locking.

Press **Escape**. The following screen displays, with your code instead of XXXX.

```
Unlock Code                    ↑
 *"XXXX"
ENTER to Accept
ESCAPE to Exit                 ↓
```
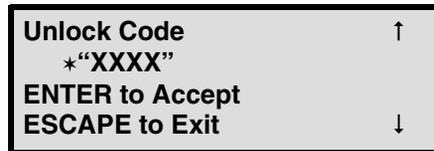
Figure 3-18. Code Accept Submenu

Press **Enter** if you want to adopt the unlock code that is displayed. Press **Escape** if you do not want to accept it. Press **Escape** again to return to the Main Menu, and again to return to the Default Screen.

Unlocking the Control Panel

Once the control panel is locked via the Security Menu, each time you attempt to enter Menu Mode, you will be asked to enter the security code, as shown in the following screen:

```
Front Panel Locked

ENTER to Unlock
ESCAPE to Exit
```

Figure 3-19. Panel Locked Screen

NOTE: The control panel lock also prevents operator access to the Unlock Door selection on the Main Menu. For a detailed discussion of magazine locking, see *"Inserting a Magazine Into the LoaderXpress"* later in this chapter.

Even while the control panel is locked, you can still display the Status Menu without using the security code by pressing **Escape** at the Default Screen.

When you press **Enter**, the following screen displays

```
┌─────────────────────────────────┐
│ Unlock Code                  ↑  │
│                                 │
│                                 │
│                              ↓  │
└─────────────────────────────────┘
```

Figure 3-20. Unlock Code Screen

:Using the ▲ and the ▼ buttons, set the first digit of the unlock code. Press **Enter** to move the cursor to the second digit and repeat the process. When you have finished, press **Escape**. Press **Enter** to validate the unlock code or **Escape** to exit. If the code is correct, the Main Menu is displayed. If the code is incorrect, an error screen appears.

Displaying Firmware Revision

You can display the library robotics firmware revision at any time. It appears as one of the items on the Library Status submenu of the Show Status Menu. It is also displayed on line 2 of the POST Screen and the Initialization Screens.

Displaying Error Logs

To display the error history of the module use the Show History menu.

To access the Show History Menu:

1) At the Default Screen, press **Enter** to enter the Menu Mode. The Main Menu is displayed.

2) At the Main Menu, press the ▼ button five times until the ▶ in the display is next to Show History Menu.

3) Press **Enter** to select the submenu.

4) At the Show History Submenu, press the ▼ button once so that the ▶ in the display is next to Error History.

5) Press **Enter** to select the function. A circular list of 4-line error reports is displayed in the format shown in the following screen.

6) Using the ▼ and ▲ buttons, scroll the list to display the error history of the module.

> **Fault Code XXXX**   ↑
> **Error Description**
> **DD/MMM/YYYY HH:MM:SS**
> **Entry NNNN of NNNN**   ↓
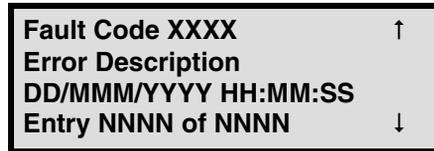
Figure 3-21. Fault Screen

Inserting and Removing Cartridges

You must remove the tape magazine from the module to insert or remove cartridges. When inserting cartridges, be sure that the slot you intend to use is not already reserved in the system map for a cartridge in that drive. The best way to avoid conflicts is to unload the drive, either through your host computer software or by using the Load/Unload command on the Main Menu, described later in this chapter.

To insert or remove the magazine, make sure the following conditions are met:

• The Control Panel is unlocked. When the Control Panel is locked, it is impossible to enter the Menu Mode.

• The host computer allows removal of the magazine. The host software can enable or disable the LoaderXpress door unlock function using the SCSI Prevent/Allow Medium Removal command. If the host is preventing removal when you select Unlock Door on the Main Menu and press **Enter**, the message *Magazine Locked* displays. To release the lock, exit the host software. If host computer failure prevents the host from releasing the lock, cycle power to the LoaderXpress.

NOTE: If you are still unable to open the magazine door, see *"Emergency Magazine Removal"* later in this chapter.
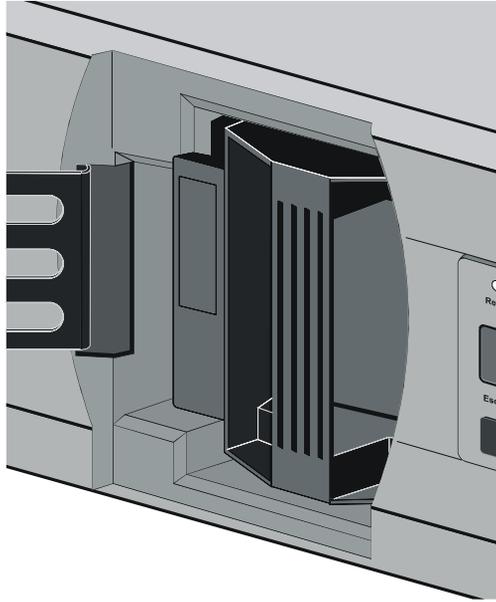
Figure 3-22. Magazine in Place

Removing the Magazine

Whenever the magazine door is closed it is locked in place to prevent tampering or accidental removal. To remove the magazine, enter the Menu Mode by pressing **Enter** at the Default Screen. At the Main Menu, select Unlock Door and press **Enter**. The magazine door swings open.

Emergency Magazine Removal

If a fault occurs that prevents removal of the magazine, turn the power off for 30 seconds. Power up while continuously pressing the ▲ button. Continue to hold the button until all of the indicators on the control panel light, then go out. Release the button. The door swings open.

Inserting a Magazine Into the LoaderXpress

To insert a magazine:

1) If the magazine door on the front of the module is closed and locked, open it as follows:

   • Enter the Menu Mode by pressing **Enter** at the Default Screen.

   • At the Main Menu, select Unlock Door and press **Enter**.

2) Slide the magazine through the door opening, with the cartridges protruding from the left.

3) When the magazine is fully inserted, push the door closed until it locks.

Inserting Cartridges Into the Magazine

To insert cartridges into the magazine:

1) Insert cartridges so that the label end with write protect switch outward, with the write protect switch toward the bottom of the magazine.

2) Position the module so the cartridges protrude to the left, and the magazine handle is toward you, as shown in the illustration.

3) Insert the magazine into the LoaderXpress with that orientation.
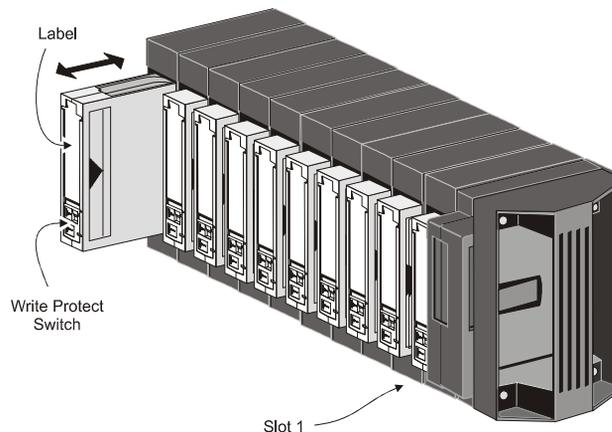
Figure 3-23. Tape Magazine with Cartridges Installed

Tape Requirements

The DLT LoaderXpress uses ECMA-approved and ANSI proposed-standard DLTtape cartridges. The DLTtape cartridge is a four inch square plastic cartridge. The cartridge and the tapes are designed to withstand 1,000,000 passes, with a shelf life of 30 years or more when properly stored.

All models of the LoaderXpress use DLTtape IV cartridges, which contain 1800 feet of tape. The native capacities of DLTtape IV are listed in Table 3-1.

Table 3-1 Tape Capacities

Model	Native Capacity
LXL4104 or 4110	20 GB
LXL7110	35 GB
LXL8110	40 GB

Under average conditions of data compression, multiply these capacities by two when compression is used.

Cartridge Handling and Storage

A DLTtape cartridge should be stored vertically until you select it for use. Do not expose a cartridge to moisture or direct sunlight. Maintain a clean, dust-free working and storage environment.

If a DLT tape cartridge is dropped:

- Inspect the cartridge carefully before you insert it into a magazine or drive.

- Shake the cartridge while listening for the sound of a broken part. Any rattling sound makes a cartridge unfit for use.

- Inspect the case for distortion or cracks.

- Inspect the leader by opening the cartridge door as shown in the following illustration. The leader should be positioned as shown in view (1), and should protrude at about a five degree angle from the case. If the leader is out of position, *do not use it;* damage to the drive could result.
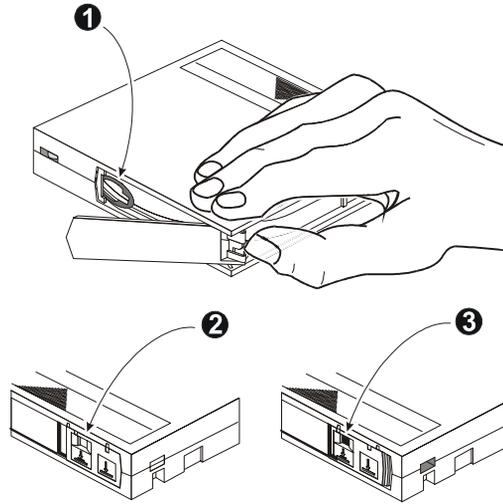
Figure 3-24. DLTtape Cartridge

Write Protection

To write protect the DLTtape cartridge, slide the write protect switch to the left until the orange indicator shows through the window on the write protect switch ❸. To enable data recording, slide the write protect switch to the right so that no orange color is visible ❷.

Loading and Unloading Tapes

The Load/Unload menus enable you to specify a source and a destination for a cartridge movement. As a result, you use exactly the same procedure to load as to unload. To load or unload a tape from the front panel of the module, use the Load/Unload menus as follows.

```
DLT No Tape
Loader Idle
1 ▌ _ _ _ _ _ _ _ _ ◄10
```
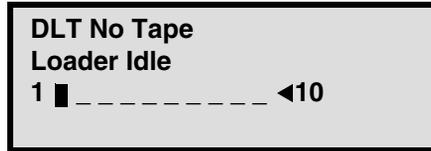
Figure 3-25. Default Screen

In this example, DLT1 has a tape loaded. Loader Idle on Line 2 indicates that the drive has a cartridge loaded, and is waiting for instructions. Line 3 indicates that Slot 1 of the magazine contains a cartridge and the remaining slots are empty.

From the Default Screen, enter the Menu Mode by pressing **Enter**.

```
►Load/Unload
 Unlock Door
 Show Status Menu
 Maintenance Menu
```
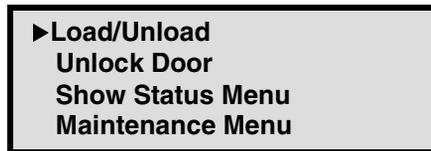
Figure 3-26. Main Menu

From line 1, press **Enter** to display the first Load/Unload submenu:

```
 From:
►∗DLT1
 To:
 ∗Slot 4                    ↓
```

Figure 3-27. Load/Unload Menu

The ► is next to line 2 which displays the top item in a scrollable list of sources. Note that a ↓ has appeared on the right of the bottom line. This means you can use the ▼ button to scroll down through the list. As soon as you press the ▼ button, three things happen.

- The list scrolls down one item (only line 2 scrolls).

- A ↑appears on the right of line 1 of the display, indicating there are more items above the item displayed on line 2.

- The ▶ at the left of line 2 disappears. This is because the * indicates the current selection or the default selection, and you have scrolled the default selection offscreen, and haven't yet selected an item from the list.

Initial Screen - From Line

The list on line 2 (the From line) includes every drive and magazine slot (including mail slots) with cartridges. (You can't retrieve a cartridge from an empty slot or drive.)

Initial Screen - To Line

The list on line 4 (the To line) includes all the valid destination choices, that is, drives and slots that are empty. (You can't put a cartridge into a full slot or drive.)

Scroll List - To Line

There is another limitation on the *To* list. If you have selected a drive on the *From* screen, the *To* list can include only slots. If you have selected a slot on the *From* screen, the *To* list can contain only drives.

For this example, unload the cartridge that is in DLT1 into any available slot. Scrollup to DLT1. The following screen displays:

```
From:
   DLT1
To:
   Slot 2                        ↓
```

Figure 3-28. Load/Unload Menu

Press **Enter** to select DLT1. Two changes occur in the display:

- The ⋆ reappears at the beginning of line 2, indicating you have made a selection.

- The ▶ moves to line 4, meaning you can select a destination

```
From:
  ⋆DLT 1
To:
▶⋆Slot 2                    ↓
```
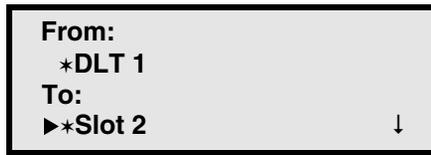
Figure 3-29. Load/Unload To Entry Screen

Press **Enter** to select Slot 2 as the destination.

The ↓ at the end of line 4 indicates there are additional choices available because:

- You have selected a drive as the source, so the destination must be a slot

- All the slots except Slot 1 are empty, so below Slot 2 there is a list of the remaining empty slots.

For this example, select Slot 4. Press the ▼ button repeatedly until Slot 4 appears on line 4. Press **Enter** to select Slot 4. The confirmation screen displays

```
From: DLT 1  To: Slot 4

ENTER to Execute
ESCAPE to Cancel
```
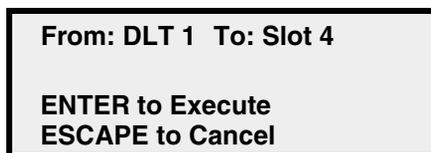
Figure 3-30. Confirmation Screen

As the confirmation screen indicates, press **Enter** to execute the load or unload. If the confirmation screen does not show your intended source and destination, press **Escape** to return to the To entry screen.

When you press **Enter**, the following screen displays. (If the source is a slot, Load in Progress displays on Line 4.)

```
 ┌──────────────────────────────────┐
 │  From: DLT 1   To: Slot 4        │
 │                                  │
 │                                  │
 │  Load In Progress                │
 └──────────────────────────────────┘
```

Figure 3-31. Load/Unload In Progress Screen

When the load or unload operation is finished, the Default Screen redisplays. It shows that there is no cartridge in DLT1 and that Slot 4 is full

```
 ┌──────────────────────────────────┐
 │  DLT No Tape                     │
 │  Loader Idle                     │
 │  1 █ _ _█ _ _ _ _ _ _ ◄10        │
 └──────────────────────────────────┘
```

Chapter 3 Maintenance

Introduction

This chapter describes running a cleaning cartridge and using the demo menu to test the robotics.

Access these options from the Maintenance Menu.

The other options on the Maintenance Menu should be performed by a qualified service technician.

Running A Cleaning Cartridge

There are two ways to run a cleaning cartridge:

- *Automatically*-by enabling the Auto Clean option
- *Manually*-by selecting the Clean Drive command from the Maintenance Submenu on the front panel display

Automatically

You can configure the Library Pro™ so that it runs the cleaning cartridge automatically. Because the cleaning cartridge is abrasive, you should not use it unless *Use Cleaner* displays on the control panel screen. The Auto Clean option operates after the first unload operation completes and the LED comes on.

Running A Cleaning Cartridge Using Auto Clean

1) Reserve a slot as the cleaning slot:

- Refer to "Setting Up Reserved Slots" in Chapter 2.

- If you have more than one reserved slot, the Cleaning Slot is the first reserved slot. Reserved slots are at the back of the magazine.

2) Install a cleaning cartridge into Reserved Slot #1.

3) Enable the Auto Clean option on the Configuration Menu:

- From the Main Menu, select Library Options / Auto Clean / Enabled.

Manually

You can manually run a cleaning cartridge.

Running A Cleaning Cartridge Manually

The following instructions discribe how to manually run a cleaning cartridge in your LoaderXpress™:

1) Install the cleaning cartridge into any slot. In this example, we use Slot 1.

2) At the Default Screen, press the **Enter** button. The Main Menu screen displays:

```
▶Load/Unload
 Remove Magazine
 Maintenance Menu
 Configure Menu          ↓
```

Figure 3-1. Main Menu

3) Scroll down to the Maintenance Menu and press the Enter button. The screen displays the Maintenance Submenu:

```
▶Clean Drive
  Diagnostic Menu
  Demo Menu
  Flash Update            ↓
```
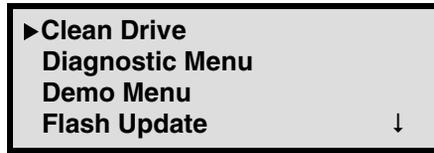
Figure 3-2. Maintenance Submenu

4) Press the **Enter** button once to select Clean Drive. The screen displays the Cleaning Submenu:

```
  Cleaning:
▶   *DLT 1
  Using:
    *Slot 1
```

Figure 3-3. Cleaning Submenu

5) Press the **Enter** button to accept Drive1. The u moves to line 4 of the display. The choices available on Line 4 are slots 1 through 19. Press the **Enter** button again to use the cartridge in Slot 1.

NOTE: If you cannot use slot 1 for the cleaning cartridge, you can scroll line 4 to select another slot.

The Cleaning Confirmation Screen displays:

```
  Cleaning:          DLT 1
  Using:             Slot 1
  ENTER to Execute
  ESCAPE to Cancel
```
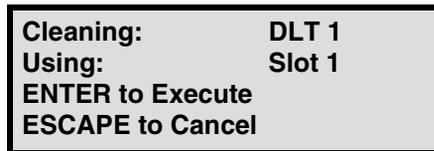
Figure 3-4. Cleaning Confirmation Screen

6) As the confirmation screen indicates, to execute the cleaning operation, press the **Enter** button. If the confirmation screen does not show your intended drive and cleaning cartridge, press the **Escape**

When you press the **Enter** button, the Cleaning In Progress screen displays: button to return to the Cleaning submenu.

```
Cleaning:          DLT 1
Using:             Slot 1

Cleaning in Progress
```

Figure 3-5. Cleaning In Progress Screen

When the cleaning operation is completed, the Default Screen reappears.

Removing the Cleaning Cartridge

1) Examine the Default Screen on the Control Panel to make sure the cleaning cartridge has been unloaded from the drive. If not, then unload it using the Load/Unload Menu, as described in Chapter 3 - Operation.

2) Remove the magazine from the LoaderXpress (refer to "Inserting Cartridges Into the Magazine" in Chapter 3).

3) Remove the cleaning cartridge from the magazine.

4) Insert any desired data cartridge into the slot vacated by the cleaning cartridge.

5) Insert the magazine into the LoaderXpress™.

6) Close the magazine door.

Using the Demo Submenu

Use this option to fully exercise the library robotics.

1) From the Maintenance Menu, select the Demo Submenu.

2) Select Demo 1.

The library robotics begin to move cartridges randomly from slot to slot, displaying the number of passes on the screen.

If all slots in the magazine are full, Demo 1 loads a cartridge into DLT1 and leaves it there. If you press the ▲ button while Demo 1 is running, the LoaderXpress loads a cartridge into DLT1, unless DLT1 is full. If you press the ▲ button again, the cartridge is unloaded from DLT1 and returned to the magazine.

Demo 1 runs continuously as long as the LoaderXpress has power.

Pausing Demo 1

To pause the test, press and hold **Escape** until a flashing message displays that the test is paused.

Stopping Demo 1

To stop the test, press **Escape** a second time to return to the Main Menu.

Chapter 5 Troubleshooting

Diagnosing Problems

There are two main types of problems that can cause the LoaderXpress to malfunction or fail to perform correctly: *platform problems* and *general drive errors*. Some errors cause Fault Symptom Codes (FSC) to display on the control panel, along with a description of the fault. Error Recovery Procedures (ERP) are available for each FSC. They are described in this chapter.

Platform Problems

These errors arise out of incorrect installation and configuration. The most common characteristic of this type of error is that the LoaderXpress appears to operate normally, except that no data can be interchanged. You may not get an error code on the control panel. To identify an error as this type of problem, check your installation and configuration setup, referring back to *Chapter 2 - Installation*.

General Drive Errors

These errors usually result from a miscommunication between the controller and the drive processor or involve a mechanical malfunction. In most cases, these types of errors report an error message and an FSC to the control panel. The only exceptions are power supply problems and display malfunctions. The FSC can be used to determine a recovery procedure.

Some error messages can be cleared by pressing **Enter** on the control panel, others by cycling the power to the module. Often the module will resume normal operation. Other errors are repeated when the operation is attempted again. Such recurrent errors may require more extensive recovery procedures such as replacement of a part.

To aid you in localizing persistent errors, there are user diagnostics available on the Demo Submenu. These are described at the end of this chapter.

Error Recovery

The following flowchart outlines the recommended steps for error recovery. This chart should be followed in all cases.
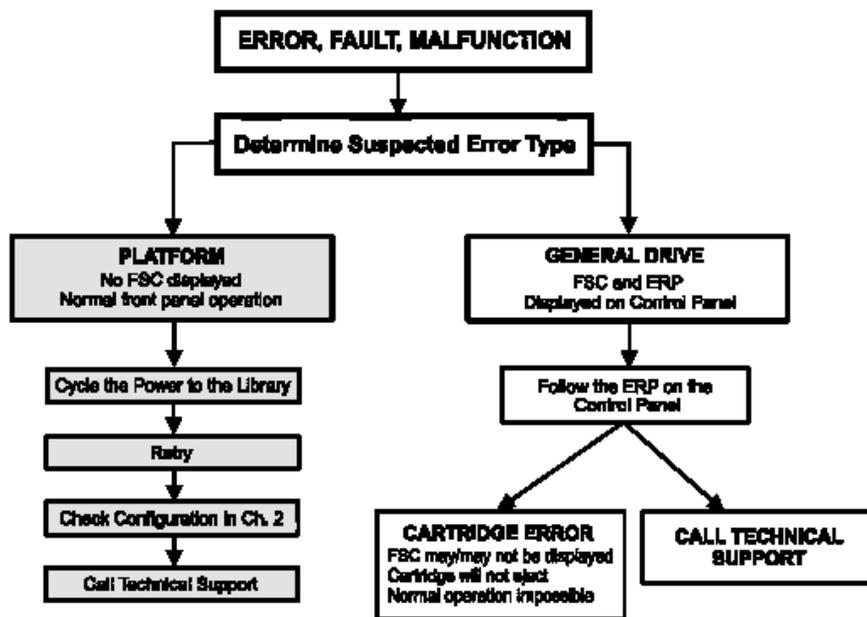
Figure 5-1. Troubleshooting Flowchart

Error Recovery Procedures

The following table describes error recovery instructions for errors reported on the front panel. This list includes only those procedures that may be safely performed by an operator. The Service Manual includes additional procedures that may be performed by an experienced service technician.

Table 5-1 Error Recovery Procedures

ERP Code	Procedure
C	Cycle power to the drive using the AC switch on the front panel of the module. Wait 30 seconds to power on again.
D	Turn off power to the module and inspect connectors and cables.
F	Invalid Operation. Select parameters correctly and try again.

Table 5-1 Error Recovery Procedures

ERP Code	Procedure
G	Call Technical Support.

Fault Symptom Codes (FSC)

Fault Symptom Codes appear in the Fault Screen described in *Chapter 3 - Operation*. Each FSC is accompanied by a descriptive message and instructions for clearing the fault. If a fault persists, look up the FSC and call your Technical Support Representative. Be sure to furnish the FSC to help identify the problem.

Table 5-2 Fault Symptom Codes

FSC	Displayed Message	ERP
3001	Picker Tries Exceeded Power down to clear	C, D, G
3002	Picker Tach Errors Power down to clear	D, G
3003	Elevator Tach Errors Power down to clear	D, G
3100	Picker Jammed Power down to clear	C, D, G
3200	Elevator Jammed Power down to clear	C, D, G
5002	All DLTs/Slots Empty Press Enter to Clear	F
5003	All DLTs/Slots Full Press Enter to Clear	F
5012	All Drives Full Press Enter to Clear	F
5014	DLT Already Loaded Press Enter to Clear	F
5015	Expired Cleaning Cartridge Press Enter to Clear	F
5016	Not a Cleaning Cartridge Press Enter to Clear	F

Table 5-2 Fault Symptom Codes (Continued)

FSC	Displayed Message	ERP
5020	All DLTs/Slots Empty Press Enter to Clear	F
5039	Invalid Unlock Code	F*

*If you do not know the unlock code, contact your system administrator.

If an error message is displayed that is not included in the table, please write down the fault code number and follow the recovery procedure described on line 4 of the display. If the same error occurs again, call your technical support representative.

Appendix A Specifications

Table A-1 Operational Performance Specifications

Host Interface LXL4105, LXL4110 LXL7110 LXL8110	Fast SCSI-2, Single-Ended Fast/Wide SCSI, Single-Ended Fast/Wide SCSI, Low Voltage Differential/ Single-Ended or High Voltage Differential
Number of Cartridges, Full Magazine LXL4105 LXL4110, LXL7110, LXL8110	 5 10
Media Type	DLTtape^{TM} IV
Number of Drives	1
Drives DLT4000 DLT7000 DLT8000	Tape Speed 110 in/sec read/write 150 in/sec search 160 in/sec read/read 175 in/sec search 168 in/sec read/write 175 in/sec search
Load Time	15 sec (max), including picking from slot
Unload Time	15 sec (max), including returning to slot

Table A-1 Operational Performance Specifications (Continued)

Rewind Time	
LXL4105, LXL4110	45 sec (avg)
LXL7110	60 sec (avg)
LXL8110	60 sec (avg)
Sustained Native Data Transfer Rate max	
LXL4105, LXL4110	5.4 GB/hr
LXL7110	18 GB hr
LXL8110	21.6 GB/hr
Compressed Data Transfer Rate **assuming 2:1 compression**	
LXL4105, LXL4110	10.8 GB/hr
LXL7110	36 GB/hr
LXL8110	43.2 GB/hr
Native Data Capacity (Full Magazine)	
LXL4105	100 GB
LXL4110	200 GB
LXL7110	350 GB
LXL8110	400 GB
Compressed Data Capacity	(Full Magazine, 2:1 compression)
LXL4105	200 GB
LXL4110	400 GB
LXL7110	700 GB
LXL8110	800 GB

Table A-2 Reliability Specifications (Drives)

Mean cycles between operator intervention	150,000
Data Error Rate	1 in 10^{17} bytes
MTBF	280,000 hours (unlimited duty cycle)
MTTR	15 min
Head Life	30,000 tape motion hours
Design Life	5 years @ 3,300 power-on hours/year

Table A-3 Reliability Specifications (Robotics)

Life Expectancy, Load/Unload Operations	500,000
Design Life	7 years

Table A-4 Power Specifications

Voltage	115-240 VAC
Amperage	1.8 - 1.2 A
Line Frequency	50-60 Hertz

Table A-5 Mechanical Specifications

Height	8 inches (20.3 cm)
Width	17.3 inches (44 cm)
Depth	20 inches (50.8cm)
Weight	48 pounds (23.2 kg)
Shipping Weight	56 pounds (26.8 kg)

Table A-6 Environmental Specifications (Non-Operating/Packed or Unpacked)

Dry Bulb Temperature	-40°F to 140°F (-40°C to 60°C)
Temperature Gradient	36°F/min (20°C)/hour (across the range)
Temperature Shock	27°F (15°C) (over 2 min)
Wet Bulb Temperature	86°F (30°C)
Relative Humidity	non-condensing 10% to 95%
Humidity Gradient	10%/hour
Altitude	-100 ft. to +10,000 ft (-305m to 3050m)

Table A-7 Environmental Specifications (Storage/Transit)

Dry Bulb Temperature	-40°F to 140°F (-40°C to 60°C)
Temperature Gradient	45°F/min (25°C)/hour (across the range)
Temperature Shock	27°F (15°C) (over 2 min)
Wet Bulb Temperature	86°F (30°C)
Relative Humidity	non-condensing 5% to 95%
Humidity Gradient	10%/hour
Altitude	-100 ft. to +10,000 ft (-305m to 25,250m)

Table A-8 Acoustic Emissions

Drive In Use (Intermittent robot motion excepted)	<50dBA

Safety

Regulatory Agency Product Safety Certifications:	
Certification	Standard
UL Listed	UL 1950
TUV/Product Service	EN 60 950
GS Mark	
CE Mark	EMC Directive, Low Voltage Directive
Canadian UL Listed	CSA 22.2 No. 950

Table A-9 Electromagnetic Emission

Notice
This equipment has been testing using double-shielded cables for EMI compliance. The use of unshielded cables or modifications requires system testing for EMI testing for compliance to the standard.

Industry Canada
This Class A digital apparatus meets all requirements of the Canadian Interference-causing Equipment regulations.

Industrie Canada
Cet appareil numérique de la classe A respecte toutes les exigencies du Règlement sur le matériel brouilleur du Canada.

FCC Notice
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference 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 their own expense.

Japanese Voluntary Control Council for Interference (VCCI)
この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Table A-9 Electromagnetic Emission (Continued)

Translation
This equipment is in the 1st Class category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Council For Interference by Information Technology Equipment aimed at preventing radio interference in commercial and/or industrial areas. Consequently, when used in a residential area or in an adjacent area thereto, radio interference may be caused to radios and TV receivers, etc. Read the instructions for correct handling.

Table A-10 Regulatory Agency Product Safety Certifications

Certification	Standard
UL Listed	UL 1950
TUV/Product Service	EN 60 950
GS Mark	
CE Mark	EMC Directive, Low Voltage Directive
Canadian UL Listed	CSA 22.2 No. 950

DECLARATION OF CONFORMITY

We, Overland Data Incorporated
8975 Balboa Avenue
San Diego, CA 92123-1599, USA

on our own responsibility, declare that the product:

Kind of equipment: **Digital Linear Tape Cartridge Library**

Type designation: **Model DLT-LXLS**

is in compliance with the following norms and documents:

European Council Directive 89/336/EEC laws relating to
electromagnetic compatibility. (EMC Directive)

EN 55 022, Radio Frequency Interference limits and measurement,
Information Technology Equipment, class B, standard.

EN 50 082-1, Electromagnetic compatibility, generic immunity
standard.
European Council Low Voltage Directive 73/23/EEC
EN 60 950, Information Technology Equipment Safety Standard.

Accredited test laboratory: **TUV Product Service**
10040 Mesa Rim Drive
San Diego, CA 92121, USA

20 February 1998
- - - - - - - - - - - - - - - - - - -   - - - - - - - - - - - - - - - - - - -
Scott McClendon, President   San Diego, California, USA
Manufacturer/Authorized   place and date of issue.
representative, name and
signature.

Appendix B   Accessories/Spares/FRUs

P/N	Description
106030-001	Bar Code Reader Assembly
108167-001	Bearings, Leadscrew, pkg/6
108168-001	Belt, Timing, 150 Tooth, pkg/5
108169-001	Bracket, Anti-rotation, pkg/5
106026-001	Cable, SCSI, 2 meter, 50-pin Cent. to 50-pin Cent.
106026-007	Cable, SCSI, 2 meter, 50-pin HD to 50-pin Cent.
106026-016	Cable, SCSI, 2 meter, 68-pin Fast/Wide
108169-001	Bracket, Anti-rotation, pkg/5
108135-001	Control Panel Assembly
108231-003	Controller PWB Assembly, 4-Channel, S/E +/or LVD SCSI
108180-003	Front Panel Assembly
108154-001	DLT Drive Door Lever, pkg/10
108136-001	Fan Assembly
106035-001	Magazine Assembly, 10-slot
106035-004	Magazine Assembly, 5-slot, pkg/2
108170-001	Motor Assembly, Tach
108142-001	Opto Sensor
108258-001	Power Supply Assembly
108243-001	Power Switch
108144-001	Shuttle Assembly
106051-003	Tape Cartridge, Cleaning, 2-pack
106051-001	Tape Cartridge, DLTtape IV