

Quantum.



User's Guide User's Guide User's Guide User's Guide User's Guide

# Quantum PX500 Series

# PX500 Series

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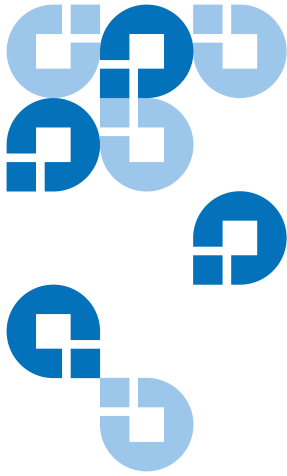
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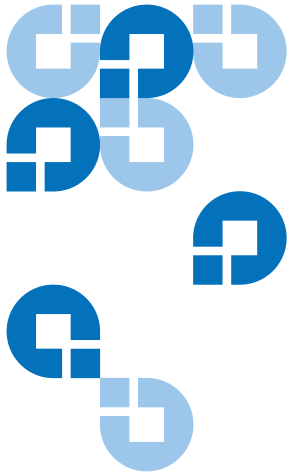
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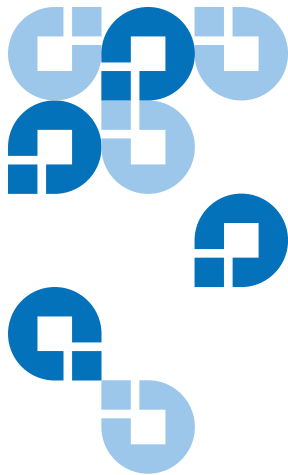


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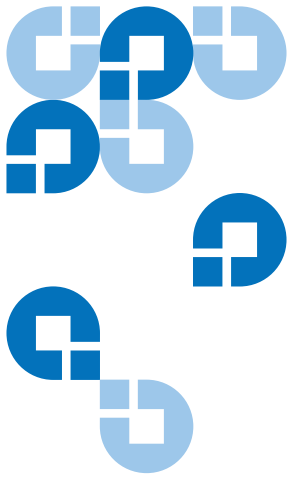
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# Preface

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**Audience**

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This document is written for operators of the PX500 Series consisting of the PX502, PX506, and PX510 tape libraries.

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**Purpose**

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This document explains how to use the PX502, PX506, and PX510 tape libraries.

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**Document Organization**

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This document is organized as follows:

- [Chapter 1, Library Description](#), provides an overview of the PX500 Series libraries.
- [Chapter 2, Basic Library Operations](#), introduces the library OCP screens and explains how to use them to perform basic library operations such as moving tape cartridges within the library, removing the tape cartridge magazines, and viewing library information.
- [Chapter 3, Quantum PX500 Series Remote Management](#), explains how to change the library configuration and manage the library using the remote GUI.
- [Chapter 4, SNMP Trap List](#), lists the SNMP traps supported by the PX500 series libraries.



- [Chapter 5, Troubleshooting](#), discusses problems you may encounter during the setup and operation of the PX500 Series library.
- [Appendix A, Specifications](#), lists the specifications for the PX500 Series libraries.
- [Appendix B, SDLTtape Cartridge Maintenance](#), provides guidelines for handling SDLT cartridges and visually inspecting them if necessary.
- [Appendix C, Installing the PX502 Library](#), provides installation information for the PX502 library.
- [Appendix D, Repacking the PX502 Library](#), provides repacking information for the PX502 library.
- [Appendix E, Regulatory Statements](#), provides regulatory information for the PX500 Series libraries.

This document concludes with a glossary and a detailed index.

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## Notational Conventions

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This manual uses the following conventions:

**Note:** Notes emphasize important information related to the main topic.

**Caution:** Cautions indicate potential hazards to equipment and are included to prevent damage to equipment.

**Warning:** Warnings indicate potential hazards to personal safety and are included to prevent injury.

This manual uses the following:

- Right side of the library – Refers to the right side as you face the component being described.
- Left side of the library – Refers to the left side as you face the component being described.

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**Related Documents**


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Documents related to the PX502, PX506, and PX510 tape libraries are shown below:

**Quantum PX500 Series Documentation**

<b>Document No.</b>	<b>Title</b>	<b>Description</b>
81-81292	<i>PX500 Series Quick Start</i>	Provides information on installing the PX502 library in a rack.
81-81301	<i>PX500 Series Tape Drive Installation Instructions</i>	Provides information on installing tape drives in the PX500 Series library.
81-81303	<i>PX500 Series Tape Drive Replacement Instructions</i>	Provides information on replacing tape drives in the PX500 Series library.
81-81354	<i>FC1202 Fibre Channel Bridge User's Guide</i>	Provides web and serial interface information for the FC1202 Fibre Channel bridge.
81-81539	<i>TC2201 iSCSI Bridge User's Guide</i>	Provides web and serial interface information for the TC2201 iSCSI bridge.
81-81357	<i>PX500 Series Magazine Upgrade Instructions</i>	Provides installation information for both the SDLT and LTO tape magazines.
6311658	<i>SNMP Integration Guide</i>	Provides integration information for SNMP.
81-81627	<i>PX500 Series DLTSage™ Secure Tape Quick Start Guide</i>	Provides information on creating secure keys on your library.

Refer to the appropriate product manuals for information about your tape drives and cartridges.

## SCSI-2 Specification

The SCSI-2 communications specification is the proposed American National Standard for information systems, dated March 9, 1990. Copies may be obtained from:

Global Engineering Documents  
15 Inverness Way, East  
Englewood, CO 80112  
(800) 854-7179 or (303) 397-2740

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## Contacts

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Quantum company contacts are listed below.

### Quantum Corporate Headquarters

To order documentation on the PX500 Series or other products contact:

Quantum Corporation  
P.O. Box 57100  
Irvine, CA 92619-7100  
(949) 856-7800  
(800) 284-5101

### Technical Publications

To comment on existing documentation send e-mail to:

[doc-comments@quantum.com](mailto:doc-comments@quantum.com)

### Quantum Home Page

Visit the Quantum home page at:

<http://www.quantum.com>

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## Getting More Information or Help

---

StorageCare™, Quantum's comprehensive service approach, leverages advanced data access and diagnostics technologies with cross-environment, multi-vendor expertise to resolve backup issues faster and at lower cost.

Accelerate service issue resolution with these exclusive Quantum StorageCare services:

- **Service and Support Website** - Register products, license software, browse Quantum Learning courses, check backup software and operating system support, and locate manuals, FAQs, firmware downloads, product updates and more in one convenient location. Benefit today at: [www.quantum.com/support](http://www.quantum.com/support).
- **eSupport** - Submit online service requests, update contact information, add attachments, and receive status updates via email. Online Service accounts are free from Quantum. That account can also be used to access Quantum's Knowledge Base, a comprehensive repository of product support information. Sign up today at: [www.quantum.com/support](http://www.quantum.com/support).
- **StorageCare Guardian** - Securely links Quantum hardware and the diagnostic data from the surrounding storage ecosystem to Quantum's Global Services Team for faster, more precise root cause diagnosis. StorageCare Guardian is simple to set up through the internet and provides secure, two-way communications with Quantum's Secure Service Center. More StorageCare Guardian information can be found at: [www.quantum.com/guardian](http://www.quantum.com/guardian).

For further assistance, or if training is desired, contact Quantum Technical Assistance Center:

North America:	+1-800-284-5101
UK, France and Germany	00800 4 QUANTUM
EMEA	+44 1256 848 766
For worldwide support:	<a href="http://www.quantum.com/contactsupport">www.quantum.com/contactsupport</a>

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## StorageCare Guardian

**StorageCare Guardian** is a remote monitoring and diagnostic solution that enables Quantum to proactively monitor the health of Quantum products, use diagnostic data to predict possible failures, and determine whether or not the problem involves a Quantum product or other critical component in the environment.

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**Benefits**

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**StorageCare Guardian** gives the customer added assurance that Quantum will make sure its products are running optimally to ensure maximum operational efficiency. Deploying this solution is easy and enables customers to minimize the costs associated with system downtime and service issues should a problem arise.

---

**More Reliable Backups**

---

Through continuous 24x7x365 monitoring, **StorageCare Guardian** proactively checks Quantum systems for common errors and alerts the customer when a Quantum product is underperforming. By proactively identifying red flags, the risk of failed backups and machine downtime can be mitigated.

---

**Faster Resolution Time**

---

When the system is down, **StorageCare Guardian** provides the necessary diagnostics data that enables Quantum to identify the root cause and expedite the problem resolution process. Problems that used to take days to fix can now be fixed in minutes. When problems require onsite support, field engineers will have better information along with the right parts necessary to fix the problem.

### **StorageCare Guardian allows Quantum to**

- Monitor diagnostic data related to Quantum products
- Receive alarms that notify Quantum of issues at the customer site
- Run diagnostic utilities to more quickly determine the root cause of issues
- Initiate remote connection to remote management interface to get more in-depth information about the health of your Quantum product.
- Distribute software/firmware upgrades - this will be available as a future enhancement

### **Product Features**

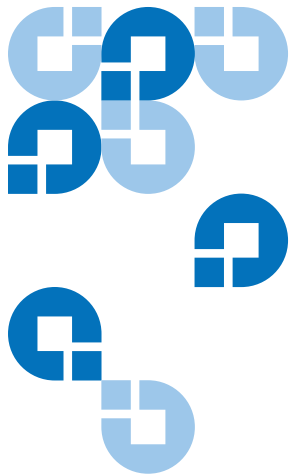
- Continuous Monitoring - Proactive 24x7x365 monitoring of Quantum products enabling Quantum Support to be alerted on events such as errors or marginal conditions that are defined by the user.

- Root Cause Diagnosis - Allows Quantum to quickly isolate and identify the root cause of a problem.
- Rapid Problem Resolution- Quantum can rapidly recommend and/or implement the corrective actions needed to resolve a problem ensuring minimal impact to the IT environment.
- Quantum Remote Software Update - Distributed software update capability allows fast updates to agent software and Quantum hardware installed at customer sites
- Real-time Data Collection - Instant on-demand or scheduled diagnostic data collection from Quantum products as well as the ability to run user-defined data collection scripts from agent.
- Access Management - Customer has full control over Quantum's access rights and privileges.
- Audit Logging - Audit logs are kept for all communications to and from the agent.

#### How it works:

- 1 Customers can download the **StorageCare Guardian** agent software from <http://www.quantum.com/guardiandownload>.
- 2 Customer installs the **StorageCare Guardian** agent on any Windows 2000/2003/XP or Solaris 8/9 server located at the customer's site.
- 3 The **StorageCare Guardian** agent monitors Quantum products, and provides information and updates to the Quantum Enterprise Server that resides at Quantum Support.
- 4 If an error or problem is detected, Quantum queues a request to the **StorageCare Guardian** agent for data collection or real-time access to the system.
- 5 The **StorageCare Guardian** agent checks access policy settings to determine if access is allowed.
- 6 If approved, the information is transferred to Quantum, or a remote connection is initiated.
- 7 Quantum Support will diagnose the problem and, if necessary, send the needed parts and/or field personnel to resolve the issue.

- 8 Quantum can identify if the backup problem is not associated with the Quantum device and then direct the customer to resolve the issue with appropriate third-party vendor.



# Library Description

---

This chapter provides an overview of the PX500 Series consisting of the PX502, PX506, and PX510 libraries. The chapter is divided into the following sections:

- [Overview](#)
- [Tape Drives](#)
- [Library Features](#)
- [DLTSage™ Tape Security](#)
- [Mixed Media Support](#)
- [Library Scalability \(Stacked Configurations\)](#)
- [Getting Started](#)



## Overview

Quantum PX500 Series libraries are automated tape storage and retrieval devices that (depending on library model, see [Library Models](#)) may consist of up to 20 tape drives and up to 170 SDLT or 200 LTO tape cartridges. Both SDLT and LTO tape cartridges can be installed in a single library as long as the appropriate magazines and drives are installed.

### Library Models

The PX500 Series libraries consist of the following models:

- [PX502 Library](#)
- [PX506 Library](#)
- [PX510 Library](#)

### PX502 Library



The PX502 library supports up to two tape drives and up to 32 SDLT cartridges or 38 LTO cartridges. Cartridges are stored in two removable cartridge magazines and two fixed slots.

	# Tape Drives	# Magazines	# Fixed Slots	# Cartridges
SDLT	0 - 2	2 (15 slots per magazine)	2	32

	# Tape Drives	# Magazines	# Fixed Slots	# Cartridges
LTO	0 - 2	2 (18 slots per magazine)	2	38

Figure 1 Slot Numbering, PX502 SDLT

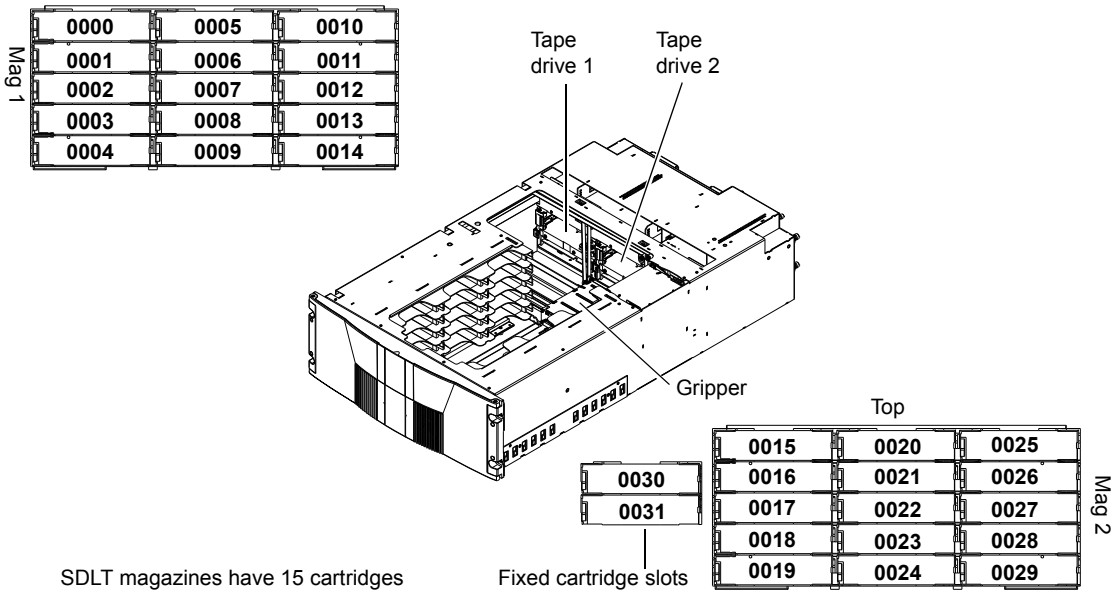
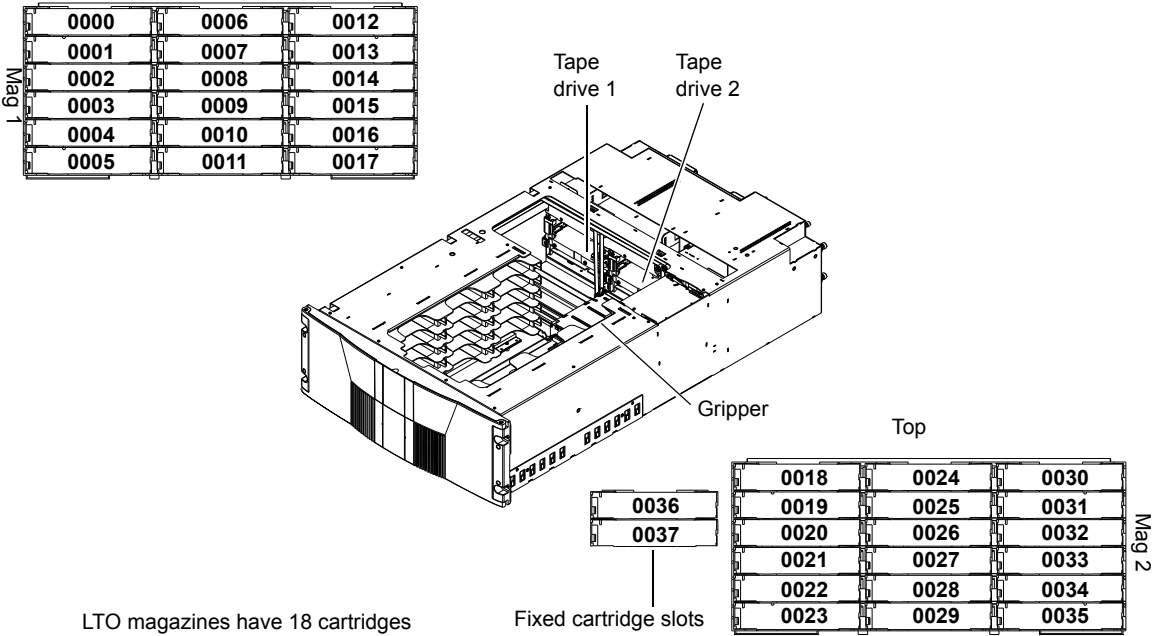


Figure 2 Slot Numbering,  
PX502 LTO



### PX506 Library



The PX506 library supports up to six tape drives and up to 88 SDLT cartridges or 100 LTO cartridges. Cartridges are stored in four removable cartridge magazines and twenty-eight fixed slots.

	<b># Tape Drives</b>	<b># Magazines</b>	<b># Fixed Slots</b>	<b># Cartridges</b>
SDLT	0 - 6	4 (15 slots per magazine)	28	88
LTO	0 - 6	4 (18 slots per magazine)	28	100

Figure 3 Slot Numbering,  
PX506 SDLT

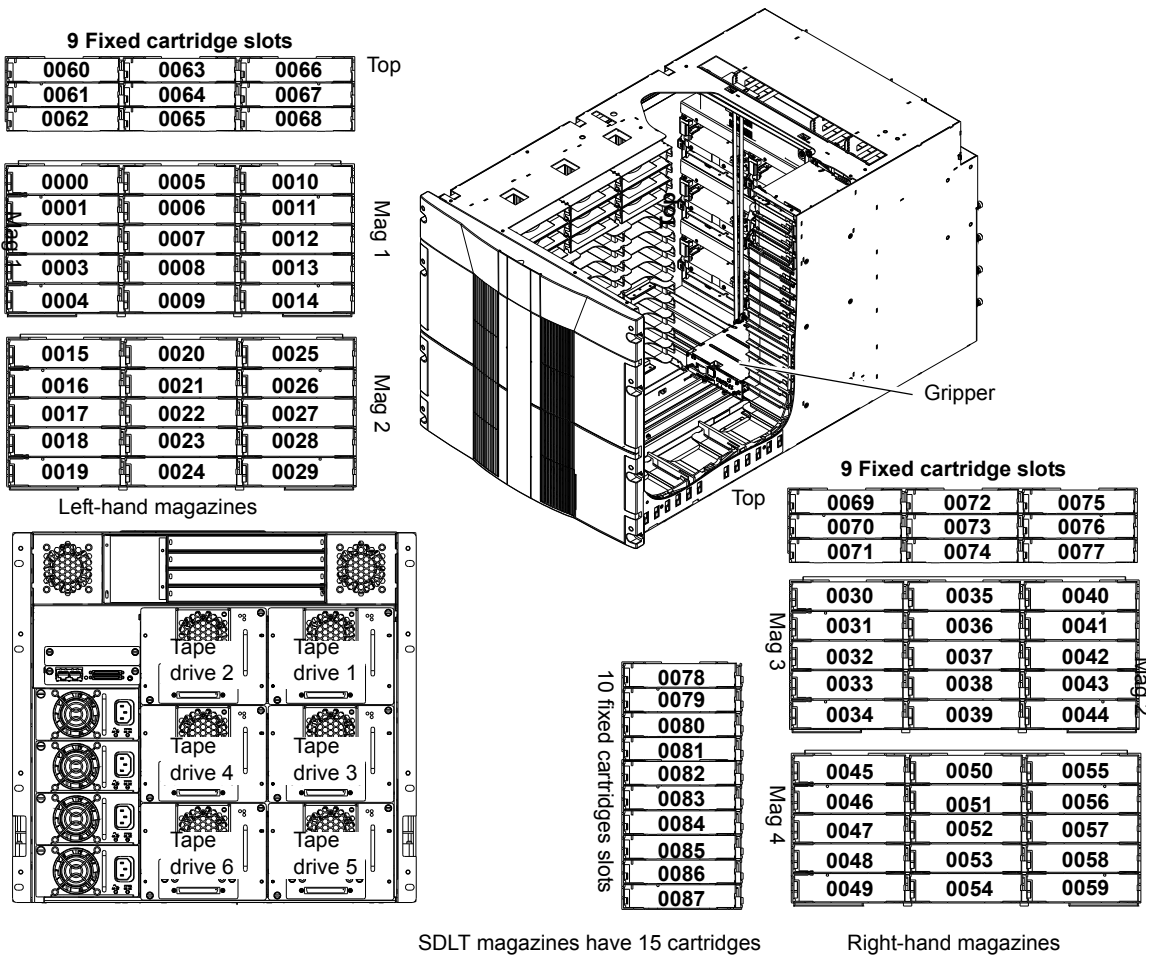
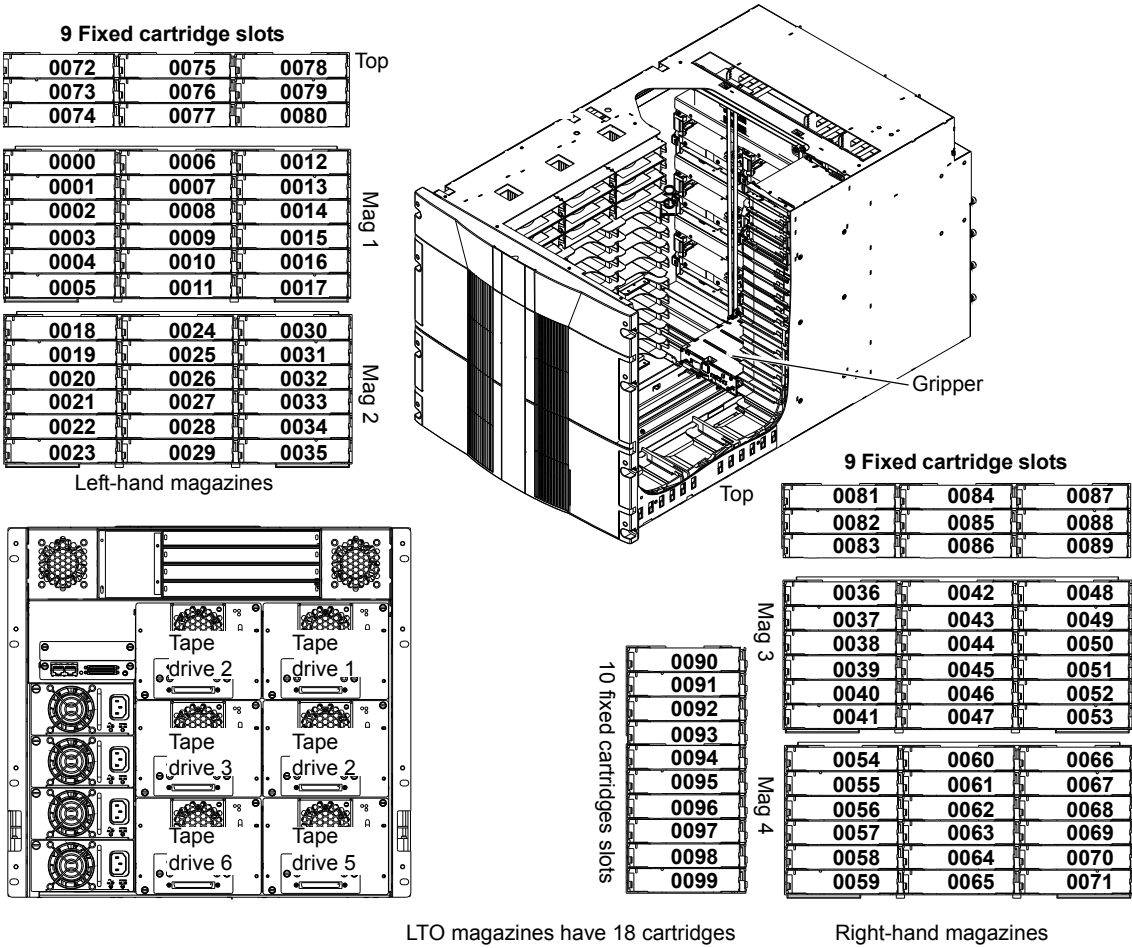


Figure 4 Slot Numbering,  
PX506 LTO



## PX510 Library



The PX510 library supports up to ten tape drives and up to 171 SDLT cartridges or 201 LTO cartridges. Cartridges are stored in ten removable cartridge magazines and twenty-one fixed slots.

	<b># Tape Drives</b>	<b># Magazines</b>	<b># Fixed Slots</b>	<b># Cartridges</b>
SDLT	0 - 10	10 (15 slots per magazine)	21	171
LTO	0 - 10	10 (18 slots per magazine)	21	201

Figure 5 Slot Numbering,  
PX510 SDLT

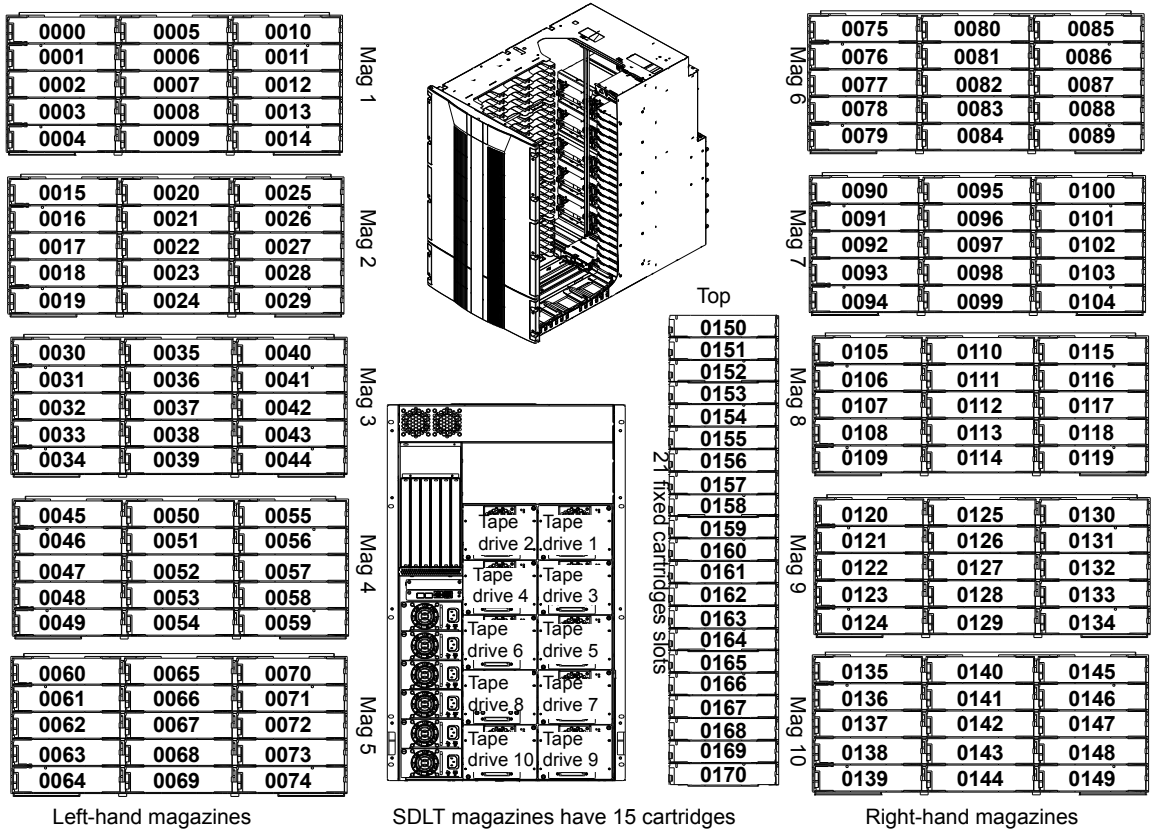
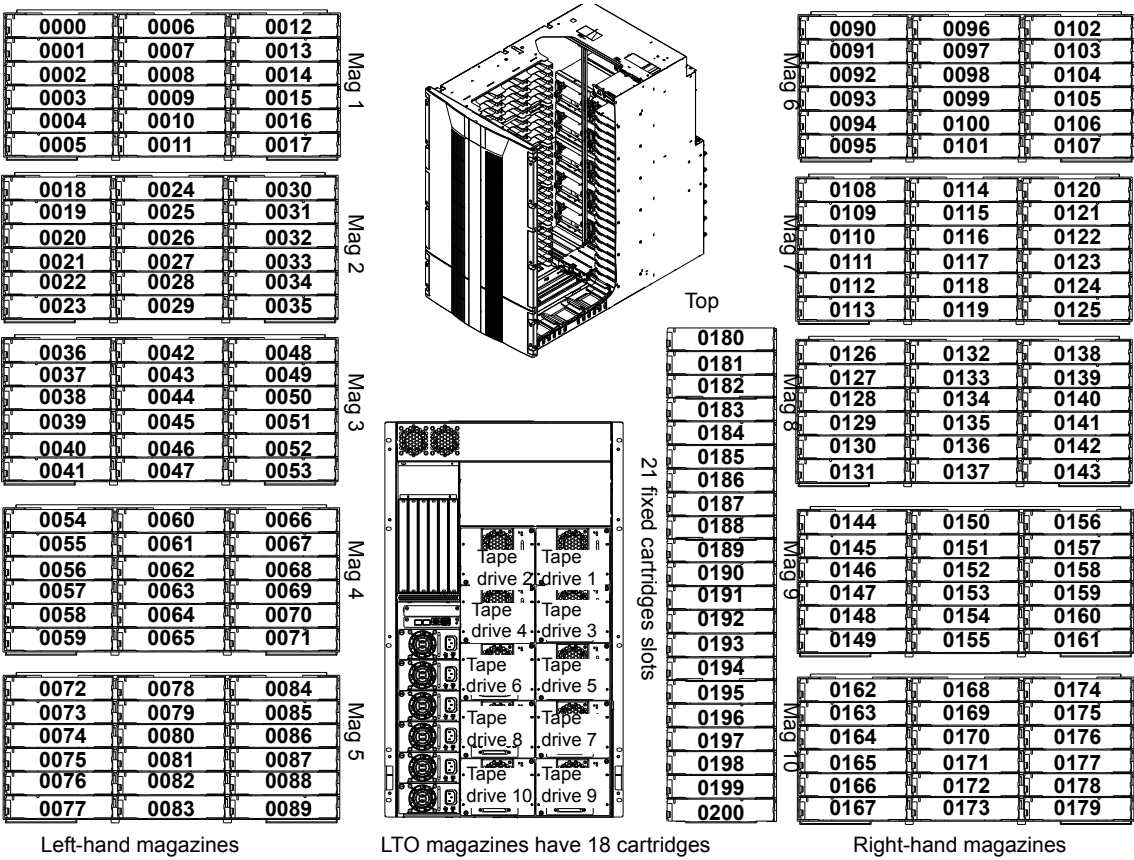




Figure 6 Slot Numbering,  
PX510 LTO



# Tape Drives

PX500 Series tape libraries are equipped with either SCSI or native Fibre Channel tape drives. One SCSI or Fibre bus is provided for the library robotics (gripper) and for each tape drive installed. SCSI buses are SCSI-2 fast/wide (8/16 bit), Ultra 3 SCSI, Ultra 160, or Ultra 320 SCSI, depending on the drives installed.

LVD SCSI configurations have a maximum allowable bus length of 12 meters. To determine the cable length of the bus, measure the lengths of the SCSI cables connecting each device to that bus and add those lengths together. To that total length, add 12.25 inches (31.10 cm) for the internal SCSI cable length of each SCSI tape drive.

## Tape Drive Types

PX500 Series libraries support the following tape drives:

- Quantum SDLT320 (SCSI only)
- Quantum SDLT600 (SCSI and Native Fibre Channel)
- Quantum DLT-S4 (SCSI and Native Fibre Channel)
- HP LTO-2 (SCSI only)
- HP LTO-3 (SCSI and Native Fibre Channel)

Refer to the following tables for tape drive performance characteristics. Both SDLT and LTO tape drive can exist in the same library as long as the appropriate magazines are installed in the library.

Table 1 SDLT 320  
Performance Characteristics

<b>Quantum PX502 SDLT Model (drives/slots)</b>	<b>2/32</b>
Capacity in Terabytes (TB) (160 GB per cartridge)	5.12
*Compressed Capacity in TB (320 GB per cartridge)	10.24
Throughput (GB/hr) based on 16 MB/sec transfer rate	115.2
*Compressed Throughput (GB/hr) based on 32 MB/sec transfer rate	230.4

\* Compressed capacity assumes a 2:1 compression ratio.

<b>Quantum PX506 SDLT Model (drives/slots)</b>	<b>6/88</b>
Capacity in Terabytes (TB) (160 GB per cartridge)	14.8
*Compressed Capacity in TB (320 GB per cartridge)	28.16
Throughput (GB/hr) based on 16 MB/sec transfer rate	345.6
*Compressed Throughput (GB/hr) based on 32 MB/sec transfer rate	691.2

\* Compressed capacity assumes a 2:1 compression ratio.

<b>Quantum PX510 SDLT Model (drives/slots)</b>	<b>10/171</b>
Capacity in Terabytes (TB) (160 GB per cartridge)	27.36
*Compressed Capacity in TB (320 GB per cartridge)	54.72
Throughput (GB/hr) based on 16 MB/sec transfer rate	576
*Compressed Throughput (TB/hr) based on 32 MB/sec transfer rate	1.152

\* Compressed capacity assumes a 2:1 compression ratio.

Table 2 SDLT 600  
Performance Characteristics

<b>Quantum PX502 SDLT Model (drives/slots)</b>	<b>2/32</b>
Capacity in Terabytes (TB) (300 GB per cartridge)	9.6
*Compressed Capacity in TB (600 GB per cartridge)	19.2
Throughput (GB/hr) based on 36 MB/sec transfer rate	259
*Compressed Throughput (GB/hr) based on 72 MB/sec transfer rate	518

\* Compressed capacity assumes a 2:1 compression ratio.

<b>Quantum PX506 SDLT Model (drives/slots)</b>	<b>6/88</b>
Capacity in Terabytes (TB) (300 GB per cartridge)	26.4
*Compressed Capacity in TB (600 GB per cartridge)	52.8
Throughput (GB/hr) based on 36 MB/sec transfer rate	777
*Compressed Throughput (TB/hr) based on 72 MB/sec transfer rate	1.6

\* Compressed capacity assumes a 2:1 compression ratio.

<b>Quantum PX510 SDLT Model (drives/slots)</b>	<b>10/171</b>
Capacity in Terabytes (TB) (300 GB per cartridge)	51
*Compressed Capacity in TB (600 GB per cartridge)	102
Throughput (TB/hr) based on 36 MB/sec transfer rate	1.3
*Compressed Throughput (TB/hr) based on 72 MB/sec transfer rate	2.6

\* Compressed capacity assumes a 2:1 compression ratio.

Table 3 DLT-S4 Performance Characteristics

<b>Quantum PX502 DLT-S4 Model (drives/slots)</b>	<b>2/32</b>
Capacity in Terabytes (TB) (800 GB per cartridge)	25.6
*Compressed Capacity in TB (1600 GB per cartridge)	51.2
Throughput (GB/hr) based on 60 MB/sec transfer rate	432
*Compressed Throughput (GB/hr) based on 120 MB/sec transfer rate	864

\* Compressed capacity assumes a 2:1 compression ratio.

<b>Quantum PX506 DLT-S4 Model (drives/slots)</b>	<b>6/88</b>
Capacity in Terabytes (TB) (800 GB per cartridge)	70.4
*Compressed Capacity in TB (1600 GB per cartridge)	140.8
Throughput (TB/hr) based on 60 MB/sec transfer rate	1.3
*Compressed Throughput (TB/hr) based on 120 MB/sec transfer rate	2.6

\* Compressed capacity assumes a 2:1 compression ratio.

<b>Quantum PX510 DLT-S4 Model (drives/slots)</b>	<b>10/171</b>
Capacity in Terabytes (TB) (800 GB per cartridge)	136.8
*Compressed Capacity in TB (1600 GB per cartridge)	273.6
Throughput (TB/hr) based on 60 MB/sec transfer rate	2.2
*Compressed Throughput (TB/hr) based on 120 MB/sec transfer rate	4.4

\* Compressed capacity assumes a 2:1 compression ratio.

Table 4 HP LTO Performance Characteristics

<b>Quantum PX502 HP LTO Model (drives/slots)</b>	<b>2/38</b>
Capacity in Terabytes (TB) (200 GB per cartridge)	7.6
*Compressed Capacity in TB (400 GB per cartridge)	15.2
Throughput (GB/hr) based on 30 MB/sec transfer rate	216
*Compressed Throughput (GB/hr) based on 60 MB/sec transfer rate	432

\* Compressed capacity assumes a 2:1 compression ratio.

<b>Quantum PX506 HP LTO Model (drives/slots)</b>	<b>6/100</b>
Capacity in Terabytes (TB) (200 GB per cartridge)	20
*Compressed Capacity in TB (400 GB per cartridge)	40
Throughput (GB/hr) based on 30 MB/sec transfer rate	648
*Compressed Throughput (TB/hr) based on 60 MB/sec transfer rate	1.3

\* Compressed capacity assumes a 2:1 compression ratio.

<b>Quantum PX510 HP LTO Model (drives/slots)</b>	<b>10/201</b>
Capacity in Terabytes (TB) (200 GB per cartridge)	40
*Compressed Capacity in TB (400 GB per cartridge)	80
Throughput (TB/hr) based on 30 MB/sec transfer rate	1.1
*Compressed Throughput (TB/hr) based on 60 MB/sec transfer rate	2.2

\* Compressed capacity assumes a 2:1 compression ratio.

Table 5 HP LTO-3  
Performance Characteristics

<b>Quantum PX502 HP LTO-3 Model (drives/slots)</b>	<b>2/38</b>
Capacity in Terabytes (TB) (400 GB per cartridge)	15.2
*Compressed Capacity in TB (800 GB per cartridge)	30.4
Throughput (TB/hr) based on 80 MB/sec transfer rate	5.8
*Compressed Throughput (TB/hr) based on 160 MB/sec transfer rate	11.5

\* Compressed capacity assumes a 2:1 compression ratio.

<b>Quantum PX506 HP LTO-3 Model (drives/slots)</b>	<b>6/100</b>
Capacity in Terabytes (TB) (400 GB per cartridge)	40
*Compressed Capacity in TB (800 GB per cartridge)	80
Throughput (TB/hr) based on 80 MB/sec transfer rate	17.3
*Compressed Throughput (TB/hr) based on 160 MB/sec transfer rate	34.6

\* Compressed capacity assumes a 2:1 compression ratio.

<b>Quantum PX510 HP LTO-3 Model (drives/slots)</b>	<b>10/201</b>
Capacity in Terabytes (TB) (400 GB per cartridge)	80
*Compressed Capacity in TB (800 GB per cartridge)	160
Throughput (TB/hr) based on 80 MB/sec transfer rate	28.8
*Compressed Throughput (TB/hr) based on 160 MB/sec transfer rate	57.6

\* Compressed capacity assumes a 2:1 compression ratio.

**Note:** When fewer than the maximum number of drives are installed in a Quantum PX500 Series library, the tape drives must occupy consecutive drive bays, beginning with drive bay 1.

If a drive experiences read/write errors when the AutoClean function is enabled, the library issues an error message stating that drive cleaning is required. Without user intervention, the library gripper replaces the data cartridge with a cleaning

cartridge. When the cleaning procedure finishes, the library gripper returns the data cartridge to the drive.

**Note:** When a cleaning cartridge has completed its 20-use limit, it is automatically exported from the library, requiring a new one to be loaded through the load port.

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## Library Features

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### Front Panel

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[Figure 7](#) illustrates the features of the PX502 library front panel. [Figure 8](#) illustrates the features of the PX506 library front panel. [Figure 9](#) illustrates the features of the PX510 library front panel

These features are described in [table 6](#).



Figure 7 PX502 Front Panel

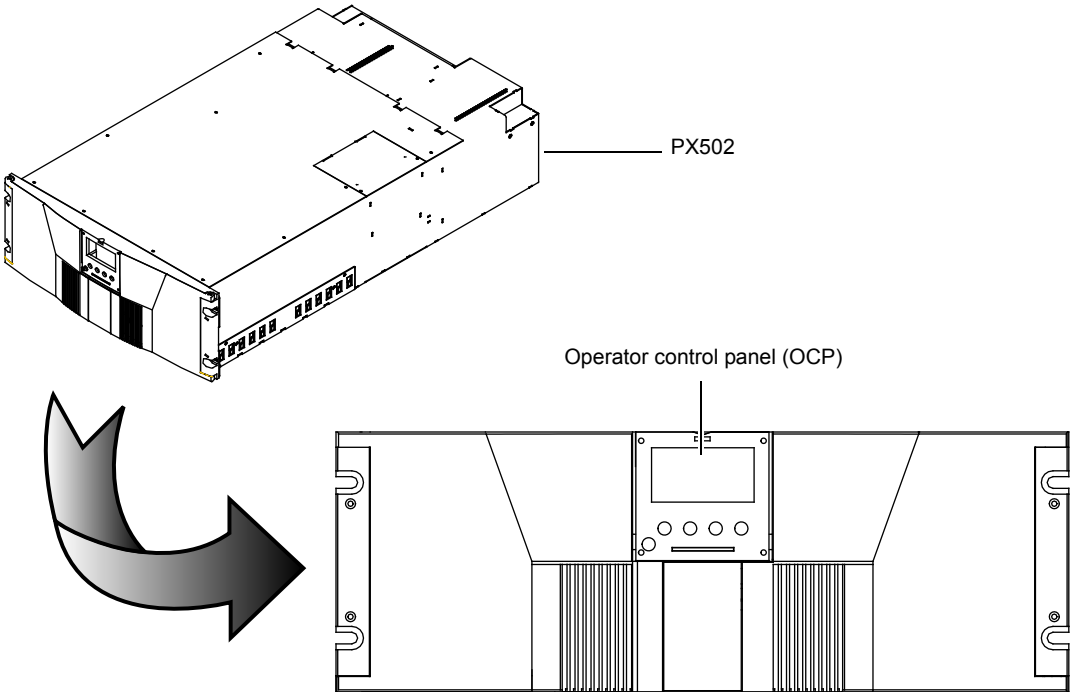


Figure 8 PX506 Front Panel

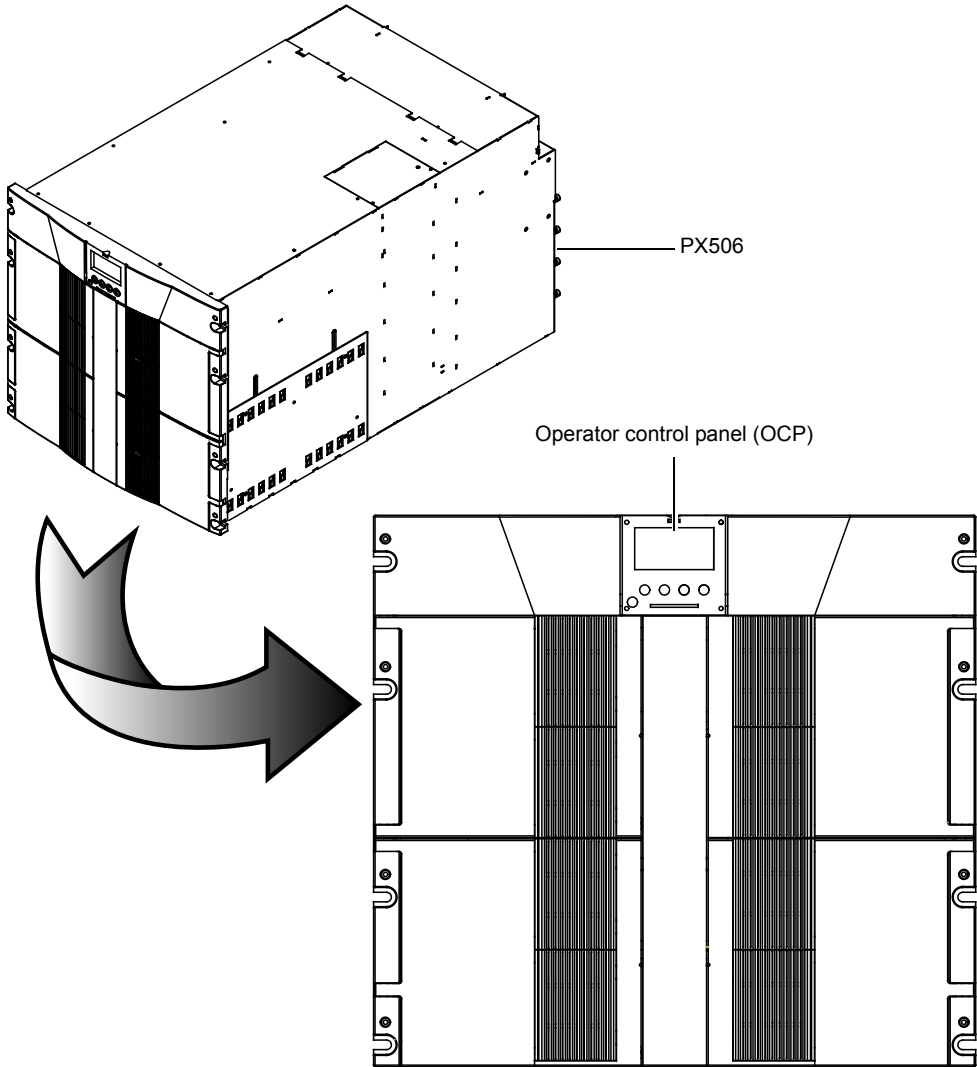


Figure 9 PX510 Front Panel

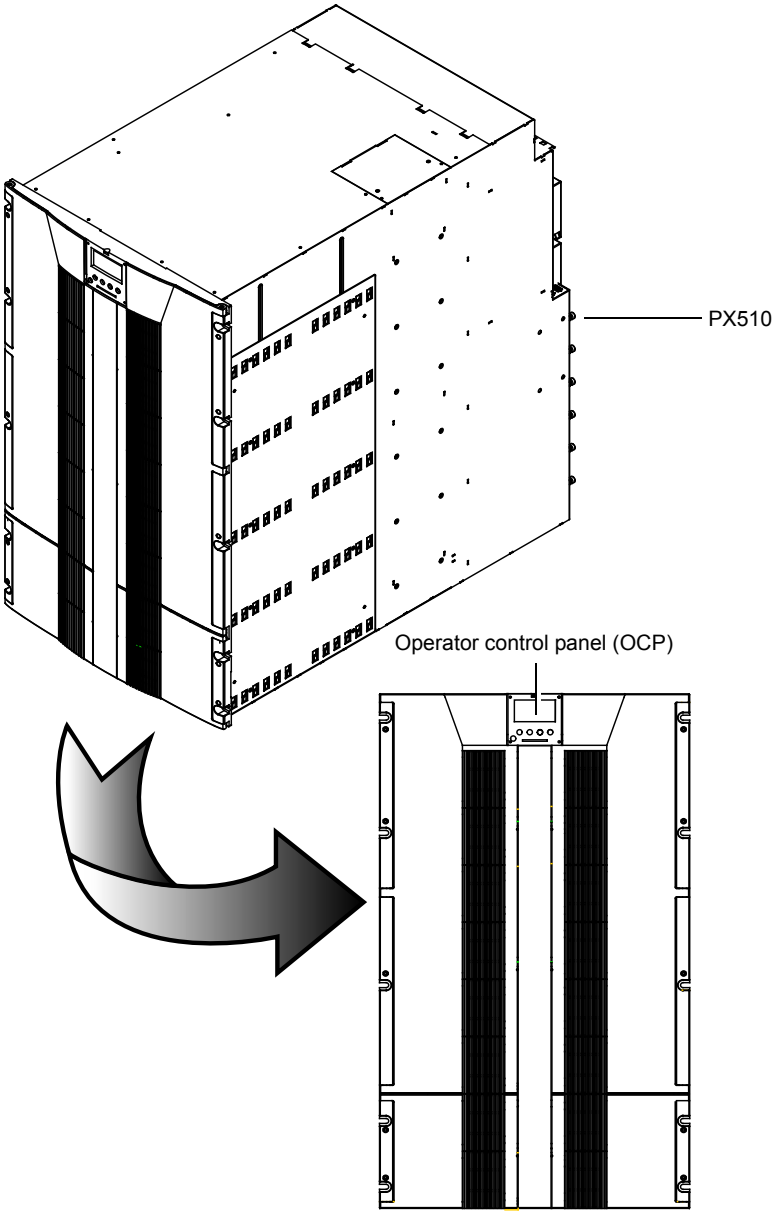


Table 6 Front Panel Features

Feature	Description
Operator control panel (OCP)	<p>The operator control panel consists of the following elements:</p> <ul style="list-style-type: none"> <li data-bbox="304 395 1218 522">• OCP display      The OCP displays library status information and allows you to access the library menus. These menus allow you to view or change the library settings and run diagnostic tests.  The OCP is discussed in detail in <a href="#">chapter 2</a>.</li> <li data-bbox="304 591 1205 748">• Five OCP buttons      These buttons in combination with the OCP are used to scroll through screens and select options or commands. The functionality of these buttons changes depending on the currently displayed OCP screen. The power button is used to turn the library on and off.</li> <li data-bbox="304 774 1136 991">• Light emitting diode (LED) indicator      The operator control panel has one LED indicators: <ul style="list-style-type: none"> <li data-bbox="539 826 976 852">• Steady green - indicates a idle state</li> <li data-bbox="539 873 1011 899">• Flashing green - indicates a busy state</li> <li data-bbox="539 920 1082 946">• Flashing amber - indicates an attention state</li> <li data-bbox="539 966 953 992">• Steady amber - indicates an error</li> </ul> </li> </ul>
Magazine access doors	These doors protect the data cartridge magazines.

**Internal Layout**

[Figure 10](#) illustrates the internal layout of a PX502 library. [Figure 11](#) illustrates the internal layout of a PX506 library.

Figure 10 PX502 Internal Layout

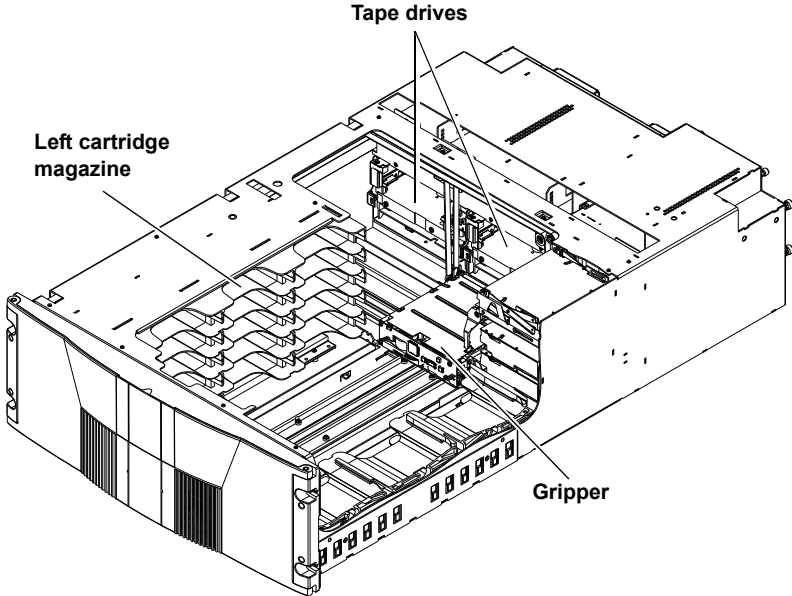
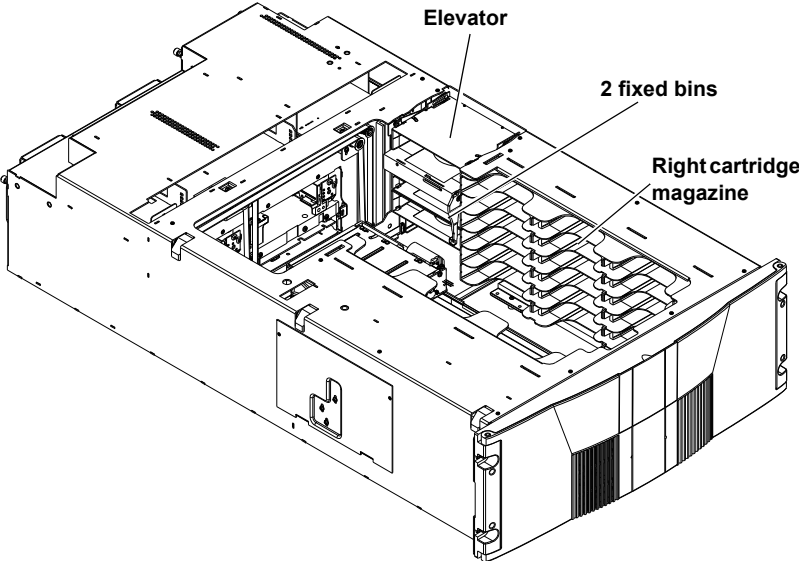


Figure 11 PX506 Internal  
Layout

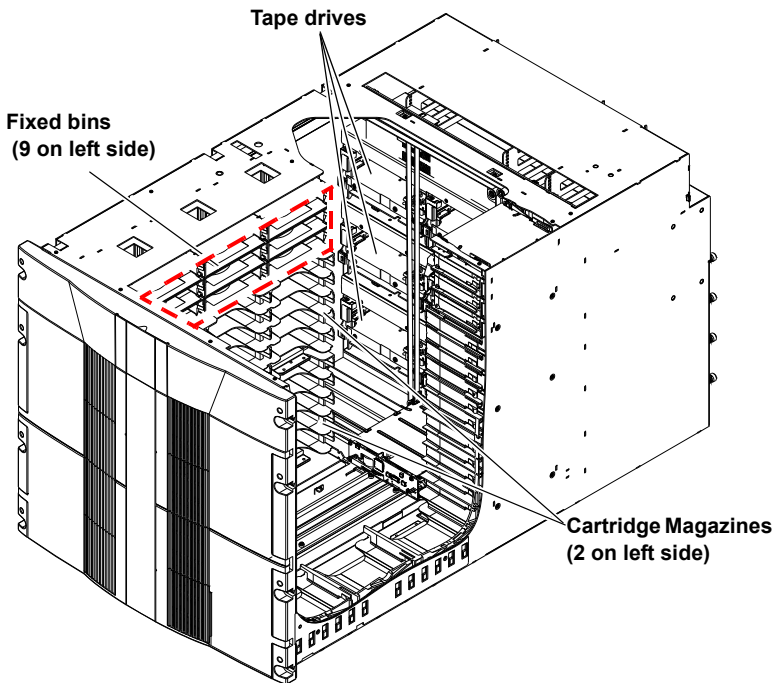
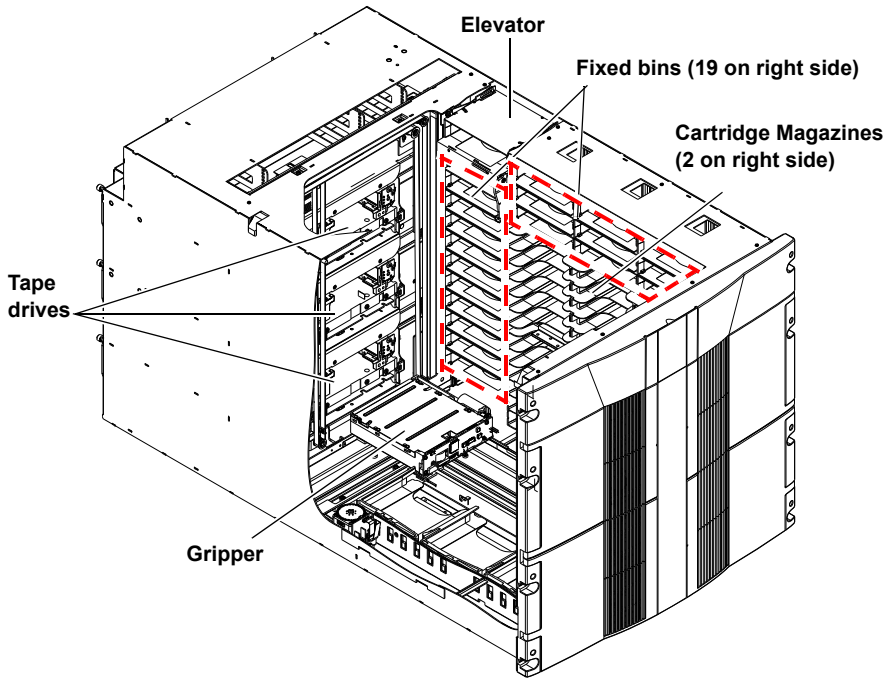


Figure 12 PX510 Internal  
Layout (Right-View)

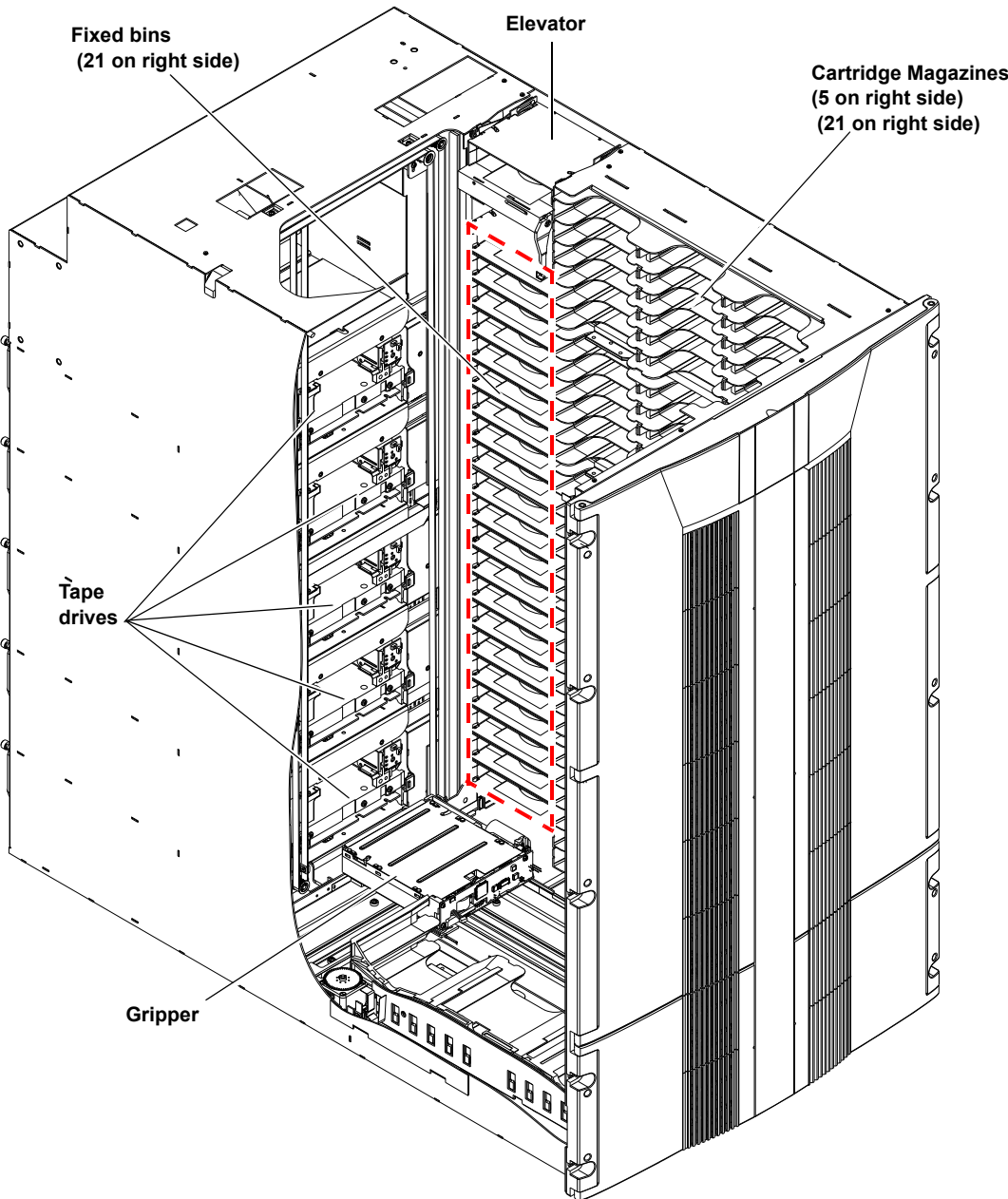
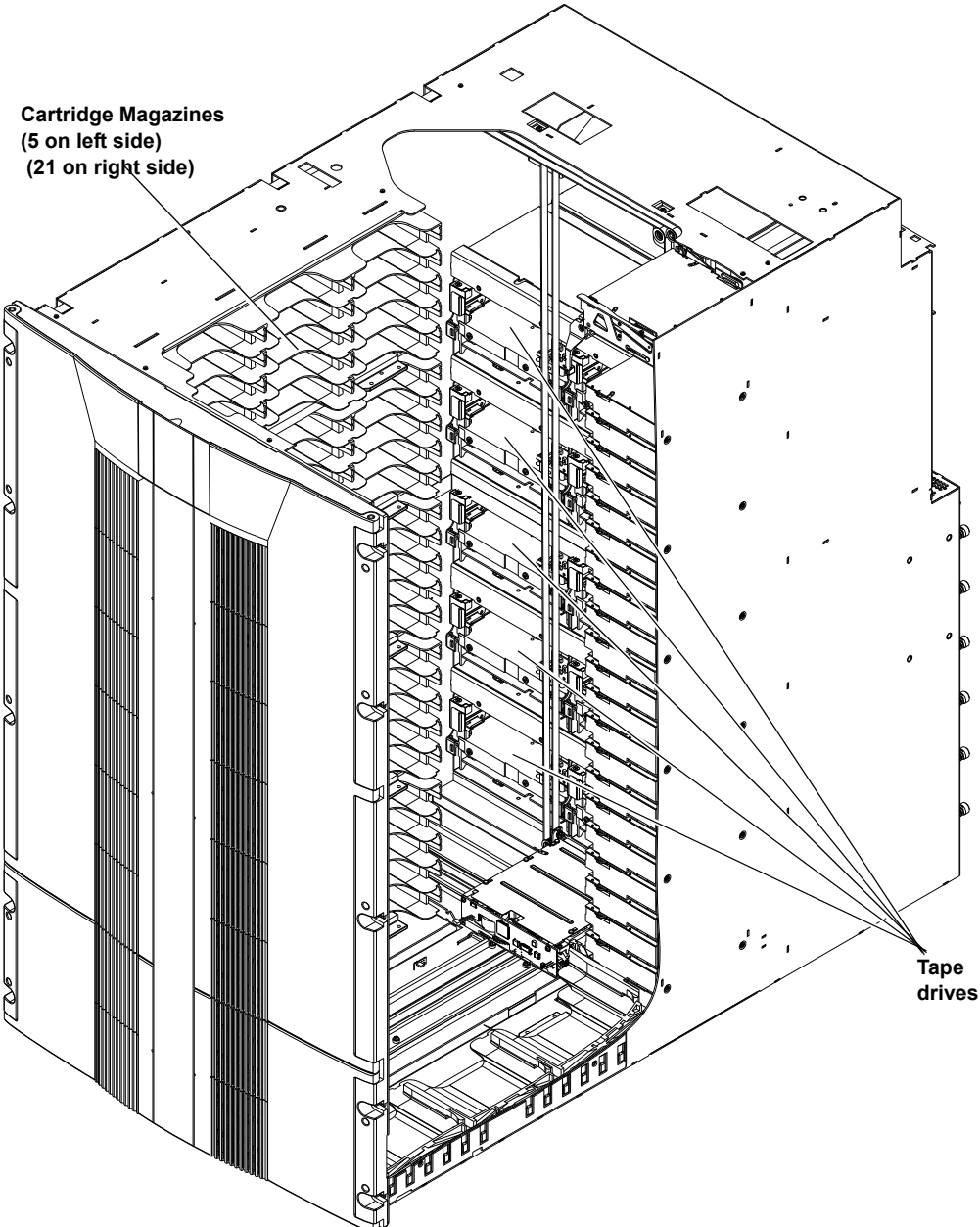


Figure 13 PX510 Internal  
Layout (Right-View)





Each cartridge magazine holds 15 SDLT cartridges or 18 LTO cartridges. The bins in the left magazines are numbered from 1 through 15 (18 in LTO libraries) from front to back. The bins in the right magazines are numbered from 1 through 15 (18 in LTO libraries) from back to front.

The PX502 has two fixed slots behind the right magazine. The PX506 has twenty-eight fixed cartridge slots, nine above each left and right magazine and ten in a column at the back of the library. PX510 has twenty one fixed slots in a column at the back of the library. Fixed slots are used for data cartridges, or for cleaning cartridges, which are moved to a tape drive when the drive requires cleaning.

A bar code reader is attached to the library's robotic hand. This bar code reader automatically identifies the cartridges in the library, if the cartridges are fitted with acceptable bar code labels.

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## Back Panel

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The library back panel provides access to the following items:

- [System Controller Board \(SCB\)](#)
- [Power Supplies](#)
- [CPCI Card Cage](#)
- [Tape Drives](#)
- [Cooling Fans](#)

### System Controller Board (SCB)

The system controller board (SCB) contains the library firmware and processor. Two Ethernet ports are available for remote management of the library. The SCB (when not in surrogate mode) also provides a connection to a host system. There are three types of SCBs:

- SCSI SCB - provides two SCSI ports for a host connection and a tape drive connection
- Fibre Channel SCB - provides a single Fibre Channel port for a host connection
- Surrogate SCB (PX502 Only) - provides the ability to allow the SCSI bus on tape drive one to also act as the media changer

## Power Supplies

The power supplies provide redundant power to the library. The PX502 can contain up to two power supplies (one power supply in the base unit). The PX506 can contain up to four power supplies (two power supplies in the base unit). The PX510 contains six power supplies.

## CPCI Card Cage

The CPCI (compact PCI) card cage provides space for option cards such as the FC1202 Fibre Channel bridge and TC2201 iSCSI bridge. The PX502 can contain one option card. The PX506 can contain up to four option cards. The PX510 can contain up to six option cards.

## Tape Drives

The PX502 can contain up to two tape drives. The PX506 can contain up to six tape drives. The PX510 can contain up to ten tape drives.

<p><b>Warning: Hazardous Moving Parts. Keep Fingers and Other Body Parts Away When Removing and Installing Tape Drives.</b></p> 	<p><b>Warnung: Gefährliche bewegliche Teile. Halten Sie die Finger und andere Körperteile weg, wenn Sie Bandlaufwerke entfernen und anbringen.</b></p>
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## Cooling Fans

Both the PX506 and PX510 contain cooling fans in the library chassis in addition to the cooling fans located in each tape drive and power supply. The PX506 and PX510 both contain two cooling fans in the library chassis.

[Figure 14](#) illustrates the back panel of the PX502 library. [Figure 15](#) illustrates the back panel of the PX506 library. [Figure 16](#) illustrates the back panel of the PX510 library.

Figure 14 PX502 Back Panel

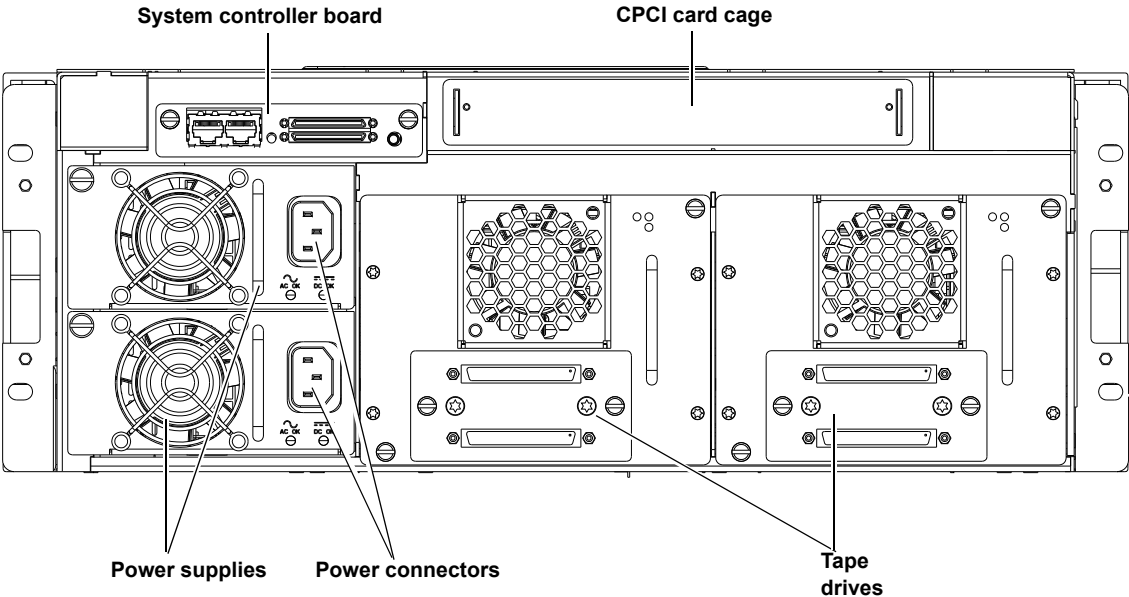


Figure 15 PX506 Back Panel

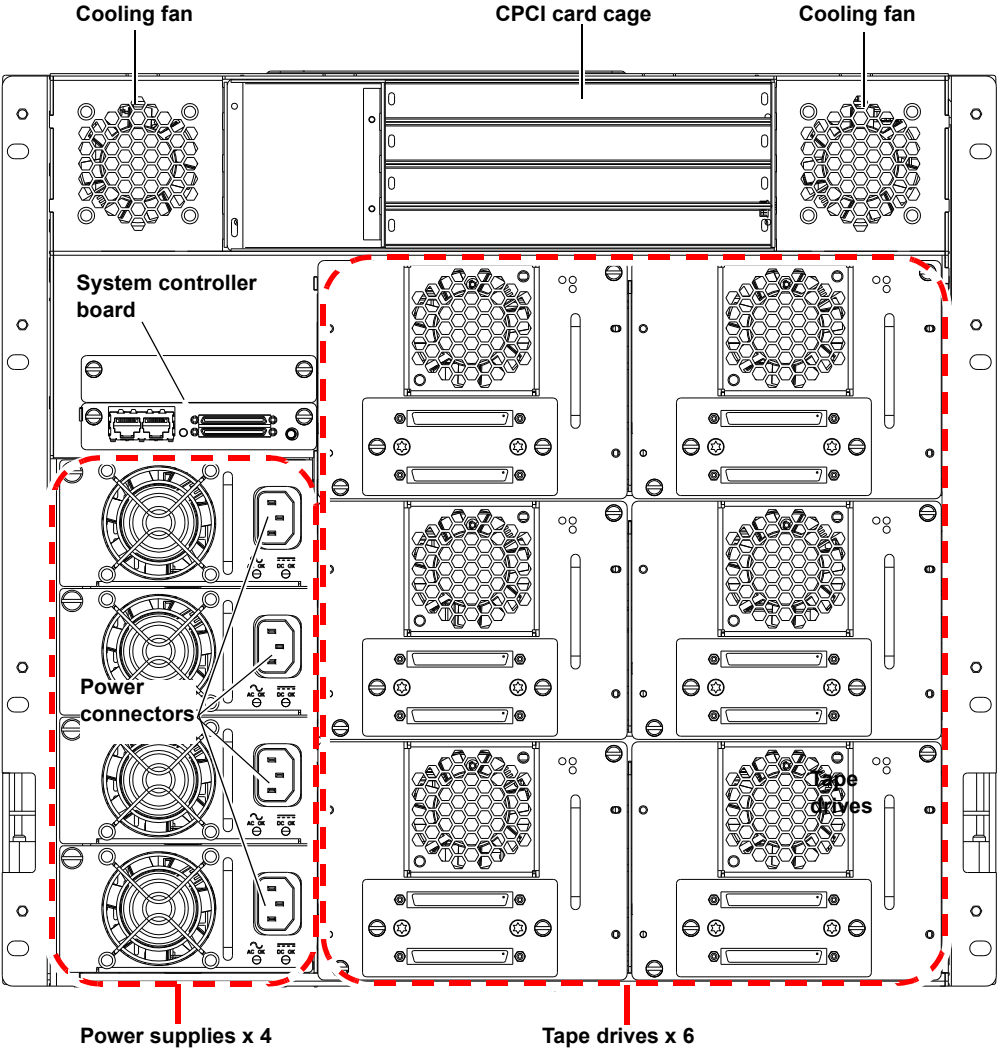
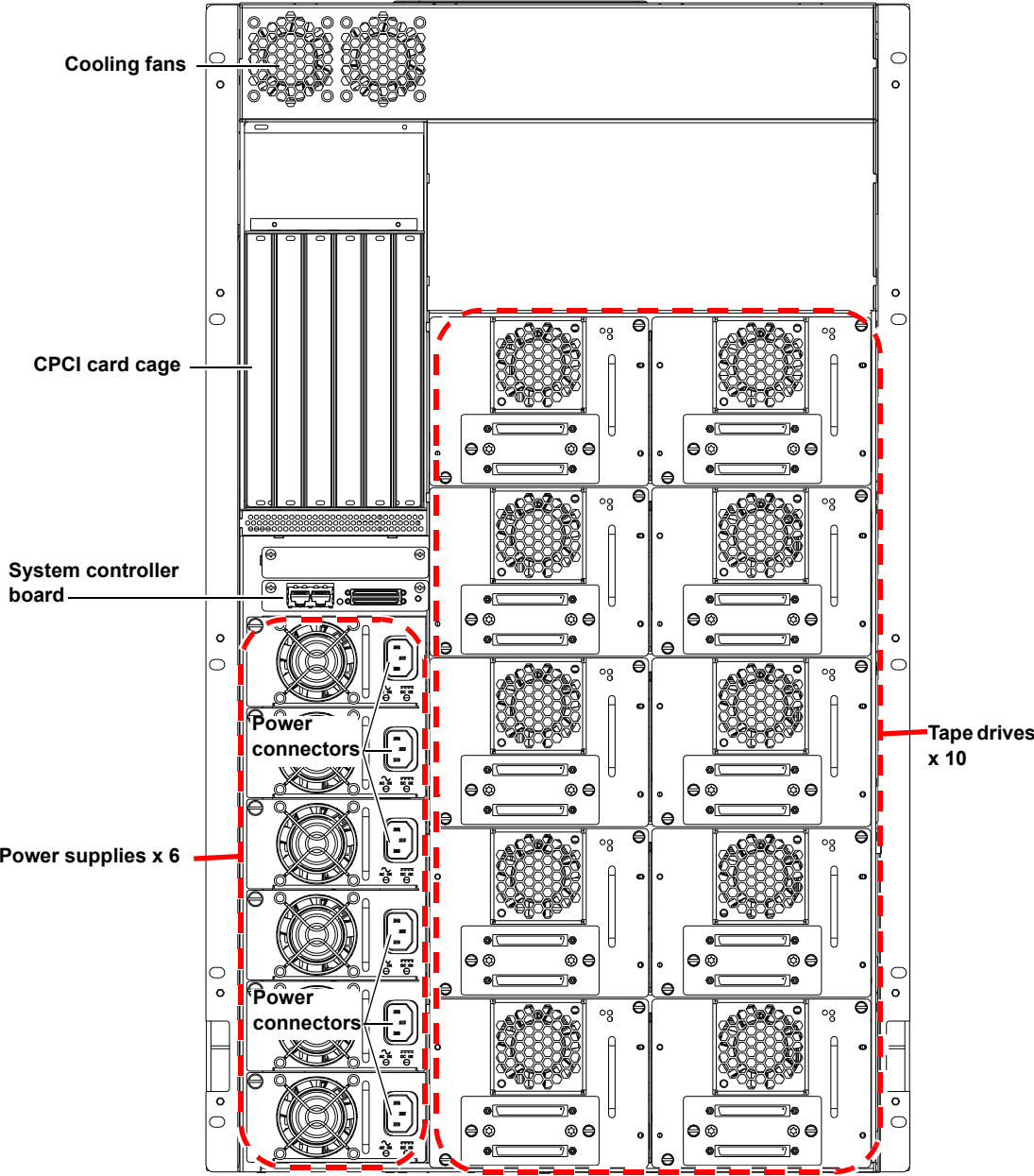


Figure 16 PX510 Back Pane



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## DLTSage™ Tape Security

The PX500 Series tape libraries with DLT-S4 tape drives are capable of utilizing DLTSage Tape security. DLTSage Tape Security is a unique solution designed to prevent unauthorized access to tape cartridges which is particularly valuable when protecting tapes that are transported offsite. DLTSage Tape Security is a firmware feature designed into the DLT-S4 tape drive which uses an electronic key to prevent or allow reading and writing of data on to a tape cartridge. This key is managed through the remote management pages of the PX500 Series tape library (see [chapter 3, “Quantum PX500 Series Remote Management,”](#)). DLTSage Tape Security is available at no additional cost as an integrated feature in of the DLT-S4 tape drive and PX500 Series tape library (firmware version 20 or later).

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## Mixed Media Support

The PX500 Series libraries are capable of supporting mixed media in the same library (SDLT and LTO media) tape drives and media in the same library frame. You must have at least one magazine type (SDLT or LTO) for each tape drive type (SDLT or LTO).

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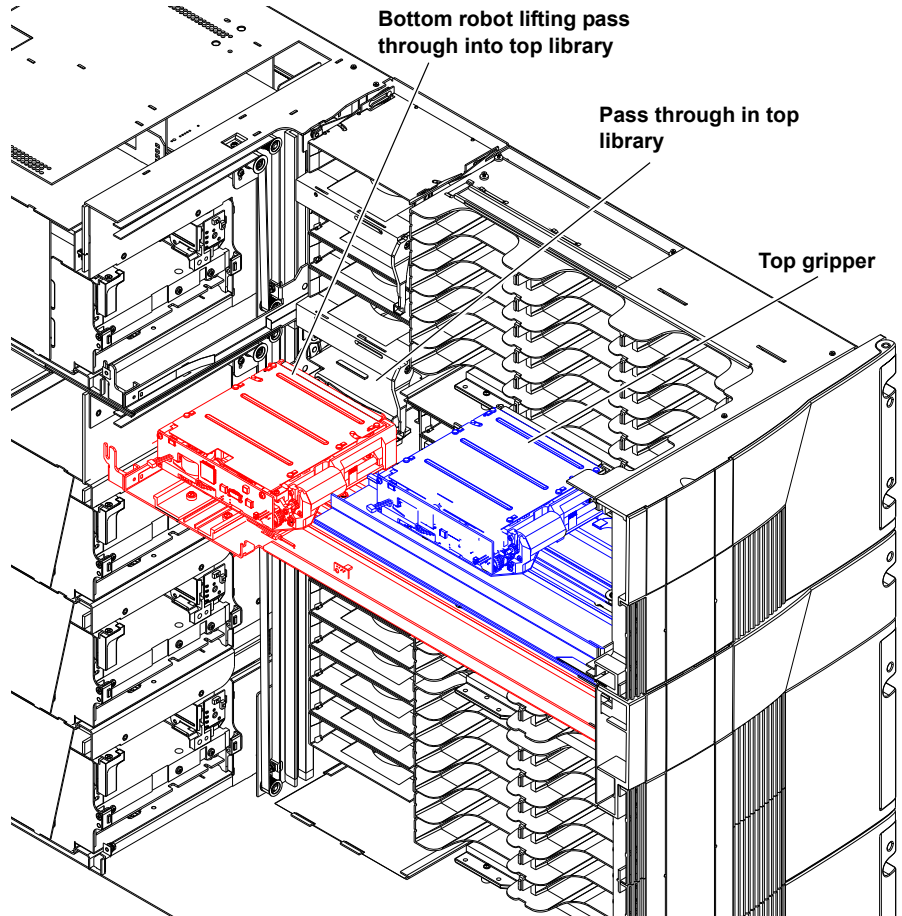
## Library Scalability (Stacked Configurations)

The PX502, PX506, and PX510 library modules can be used as stand-alone libraries, or combined with other PX500 Series library modules in a standard 19-inch rack to form a larger library system (called a multiple

library stack). The multiple library or stacked configuration appears as a single large capacity library to the host (see [figure 17](#)).

**Note:** It is recommended to place the Master library in the middle of the library stack for improved performance.

Figure 17 Multiple Library Stack (Cross Section)



[Table 7](#) lists the capacities of all the sizes of multiple library stacks created using PX502 library modules. [Table 8](#) lists the capacities of all multiple library stacks created using PX506 library modules. [Table 9](#) lists the capacities of all multiple library stacks created using PX510 library modules. You can obtain different capacities by combining PX502, PX506, and PX510 library modules in a multiple library stack.

Table 7 Capacity, PX502  
Multiple Library Stack (42U  
High Rack)

# of PX502 Library Modules	Max. # of Tape Drives	# of Cartridges*		Capacity (in TB)*									
		SDLT	LTO	SDLT 320		SDLT 600		DLT-S4		HP LTO Gen 2		HP LTO Gen 3	
				Native	Compressed†	Native	Compressed†	Native	Compressed†	Native	Compressed†	Native	Compressed†
1	2	32	40	5.1	10.2	9.6	19.2	26.4	52.8	7.6	15.2	15.2	30.4
2	4	64	80	10.2	20.4	19.2	38.4	52.8	105.6	14.4	28.8	28.8	57.6
3	6	96	120	15.3	30.6	28.8	57.6	79.2	158.4	22.0	44.0	44.0	88.0
4	8	128	160	20.4	40.8	38.4	76.8	105.6	211.2	29.6	59.2	59.2	118.4
5	10	160	200	25.5	51	48.0	96.0	132	264	37.2	74.4	74.4	148.8
6	12	192	240	30.6	61.2	57.6	115.2	158.4	316.8	44.8	89.6	89.6	179.2
7	14	224	280	35.7	71.4	67.2	134.4	184.8	369.6	52.4	104.8	104.8	209.6
8	16	256	320	40.8	81.6	76.8	153.6	211.2	422.4	60.0	120.0	120.0	240.0
9	18	288	360	45.9	91.8	86.4	172.8	237.6	475.2	67.6	135.2	135.2	270.4
10	20	320	400	51	102	96	288	264	528	75.2	150.4	150.4	300.8

\*.The values in the **# of Cartridges** and **Capacity** columns assume that all the magazines and fixed cartridge slots are fully populated with data cartridges.

†Compressed values assume 2:1 compression ratios.



Table 8 Capacity, PX506  
Multiple Library Stack (42U  
High Rack)

# of PX506 Library Modules	Max. # of Tape Drives	# of Cartridges*		Capacity (in TB)*									
		SDLT	LTO	SDLT 320		SDLT 600		DLT-S4		HP LTO Gen 2		HP LTO Gen 3	
				Native	Compressed†	Native	Compressed†	Native	Compressed†	Native	Compressed†	Native	Compressed†
1	6	88	100	14.8	28.7	26.4	52.8	70.4	140.8	20.0	40.0	40.0	80.0
2	12	176	200	29.6	57.4	52.8	105.6	140.8	281.6	40.0	80.0	80.0	160.0
3	18	264	300	44.4	86.1	79.2	154.8	211.2	422.4	60.0	120.0	120.0	240.0
4	24	352	400	59.2	114.8	105.6	207.6	281.6	563.2	80.0	160.0	160.0	320.0

\*.The values in the **# of Cartridges** and **Capacity** columns assume that all the magazines and fixed cartridge slots are fully populated with data cartridges.

†Compressed values assume 2:1 compression ratios.

Table 9 Capacity, PX510  
Multiple Library Stack (42U  
High Rack)

# of P X510 Library Modules	Max. # of Tape Drives	# of Cartridges*		Capacity (in TB)*									
		SDLT	LTO	SDLT 320		SDLT 600		DLT-S4		HP LTO Gen 2		HP LTO Gen 3	
				Native	Compressed†	Native	Compressed†	Native	Compressed†	Native	Compressed†	Native	Compressed†
1	10	170	200			51	102	136.8	273.6	40	80	80	160
2	20	340	400			102	204	273.6	555.2	80	160	160	320

\*.The values in the **# of Cartridges** and **Capacity** columns assume that all the magazines and fixed cartridge slots are fully populated with data cartridges.

†Compressed values assume 2:1 compression ratios.

---

## Getting Started

This chapter describes the procedures necessary to get your Quantum PX500 Series up and running. Have the following equipment and accessories available before installing the library:

- SCSI cables to support 1 host bus adapter (HBA) per two tape drives
- HBAs in the host
  - 2 tape drives per SCSI bus)

**Note:** SDLT 600, DLT-S4, and LTO-3 tape drives require a dedicated SCSI bus for each tape drive (1 tape drive per SCSI bus).

- Power source (see [appendix A](#) on page 189 for power requirements)
- Tape cartridges (LTO and/or SDLT)

After the Quantum PX500 Series is in its final location, the following steps are required to complete the installation:

- [Installing the Quantum PX500 Series](#)
- [Cabling the Quantum PX500 Series](#)
- [Loading Tape Cartridges](#)
- [Initial Configuration](#)

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### Installing the Quantum PX500 Series

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The PX500 Series library modules fit into a standard 19-inch wide rack. Refer to [figure 10](#) and [figure 11](#) for rack space requirements. Complete mounting information is provided in the *Quantum PX502 Series Quick Start* (PN 81-81292-01 A01) and the *Quantum PX506 and PX510 Unpacking and Installation Instructions* (PN 81-81338-01\_A01).

Table 10 Rack Space Requirements (PX502 and PX506)

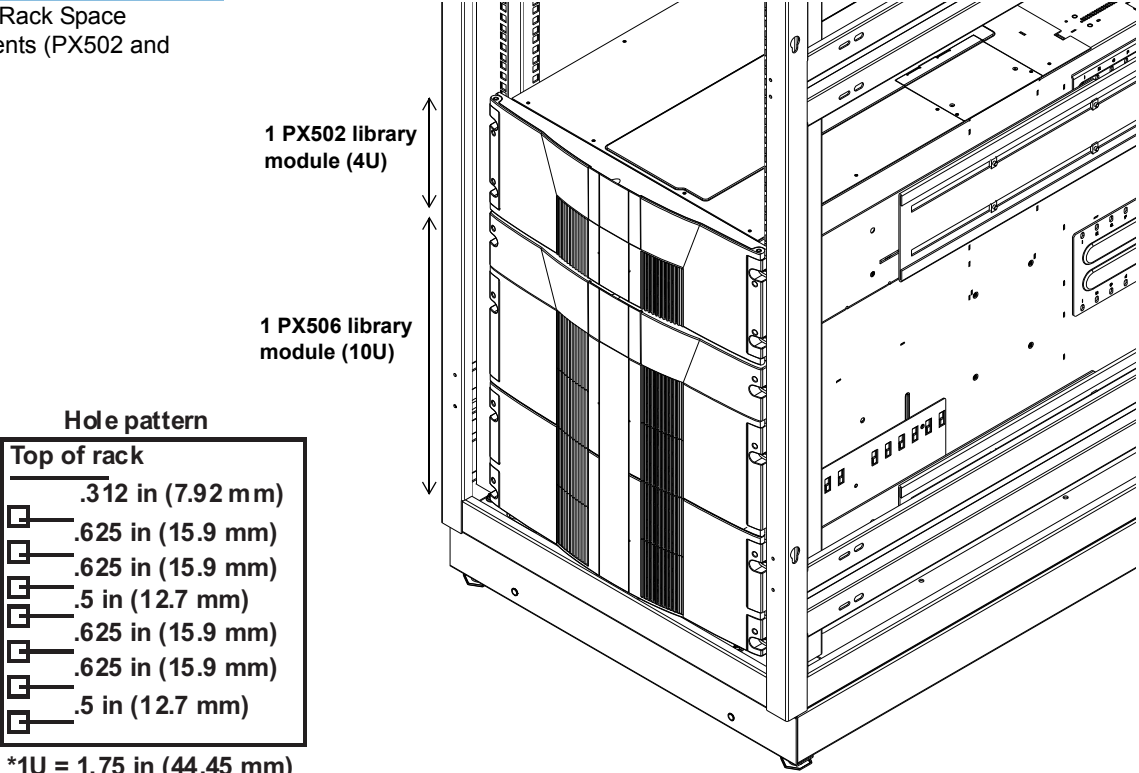









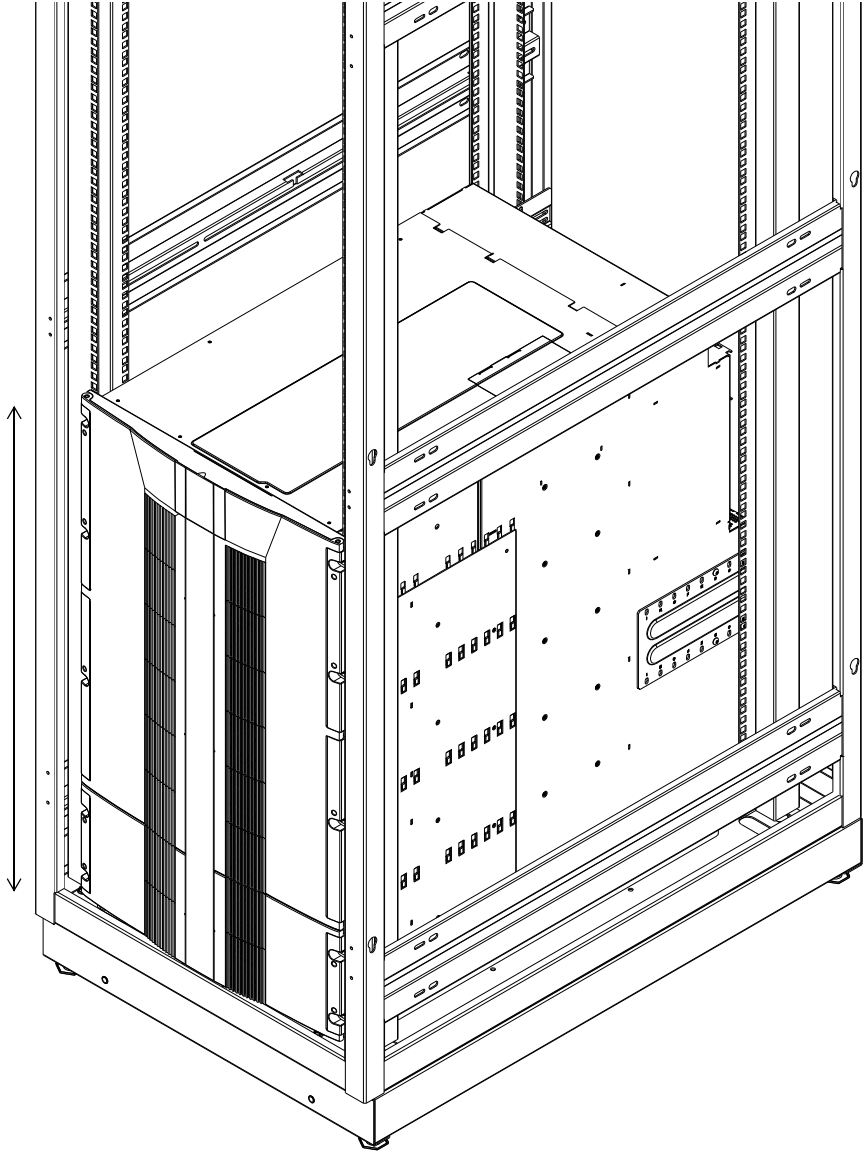
Table 11 Rack Space  
Requirements (PX510)

1 PX510 library  
module (18U)

Hole pattern

Top of rack	
	.312 in (7.92 mm)
	.625 in (15.9 mm)
	.625 in (15.9 mm)
	.5 in (12.7 mm)
	.625 in (15.9 mm)
	.625 in (15.9 mm)
	.5 in (12.7 mm)

\*1U = 1.75 in (44.45 mm)



**Warning:** If the rack is empty at the time of installation, do NOT install the PX-Series modules too high in the rack. The combined weight of the components may cause the rack to become “top heavy” and unstable if installed in the top of an empty rack. If installing a multiple library stack, begin installing the bottom library module first.

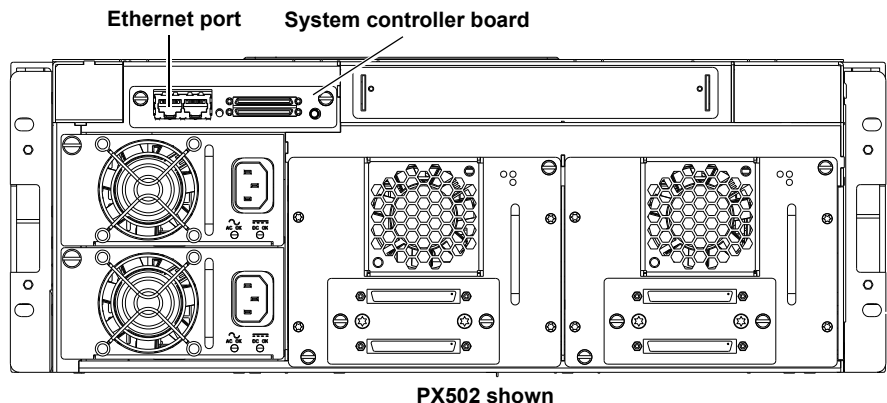
## Cabling the Quantum PX500 Series

After the Quantum PX500 Series is in its final location, the tape drives and system controller board must be connected to the backup host system(s).

To cable the Quantum PX500 Series:

- 1 The PX500 Series tape drives and system controller board are accessed from the back of the library (refer to [“Connecting to Host Workstations”](#) on page 51).
- 2 Connect Ethernet port located on the back of the library on the system controller board to the local area network (see [figure 18](#)).

Figure 18 Connecting the Library to the Local Area Network



## Loading Tape Cartridges

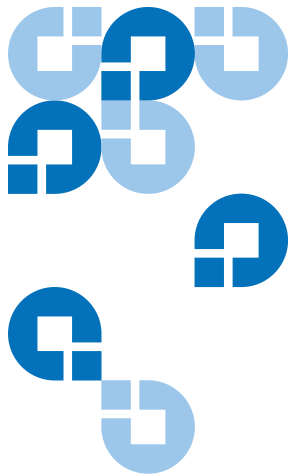
Before operating the library, load the appropriate tape cartridges (LTO or SDLT) into the library starting with the left-hand panels (see [“Library Models”](#) on page 2 for slot locations).

---

**Initial Configuration**

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The Quantum PX500 Series must be initially configured with an IP address before the remote management software is available. Refer to [“Using the OCP”](#) on page 60 for information on configuring your PX500 Series network information and preparing for operation.



# Basic Library Operations

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This chapter describes the following basic library operating procedures:

- [Installing Tape Cartridges](#)
- [Preparing the Library for Operation](#)
- [Turning the Library On and Off](#)
- [Using the OCP](#)

---

## Installing Tape Cartridges

To install tape cartridges:

- 1 Label each cartridge (see [“SDLT Cartridges”](#) on page 43 and [“LTO Cartridges”](#) on page 45 for information on cartridge labels).
- 2 Set the write-protect switch to either write protect or write enable (see [“SDLT Cartridges”](#) on page 43 and [“LTO Cartridges”](#) on page 45 for information on write-protect switches).

- 3 Place cartridges (right side up) in the fixed slots and magazines:
  - a Open the library doors (see [“Library Operations”](#) on page 68 to open the library doors).

**Note:** In a PX506 and PX510 library, the bottom doors must be open to open the top doors.

- b Remove the magazines (see [“Library Operations”](#) on page 68 to release the magazines).

**Note:** You have approximately 10 seconds to open the doors and remove the magazines. If you did not complete the operation, repeat the steps.

**Note:** In a PX506 and PX510 library, only the bottom magazines must be released from the OCP. All other magazines can be removed without being released.

- c Load the tape cartridges in the magazines and fixed bins. It is recommended to start loading tape cartridges in magazine 1, bin 0000 (see [“Library Models”](#) on page 2 for magazine and bin locations).

**Warning:** Do NOT reach into the library to load tape cartridges into the fixed bins. Use the **Move** page located on the **Operations** tab from the remote management pages (see [chapter 3](#) on page 85) to move tape cartridges from the magazines into the fixed bins.

- d Replace the magazines in the library.
  - e Close the library doors.

**Caution:** Placing the cartridges in the bins upside down can cause damage to the library (see [figure 20](#) for SDLT cartridges and [figure 21](#) for LTO cartridges).



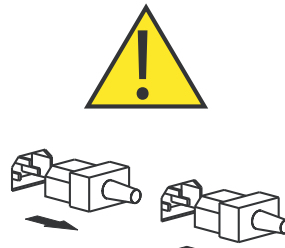
**Caution:** Handle tape cartridges with care. Do not drop or bang them, or place them near sources of electromagnetic interference. Rough handling can displace the tape leader, making the cartridge unusable and potentially hazardous to the tape drives. Loss of data could result from damaged tape cartridges inserted in tape drives.

## Taking ESD Precautions

Components within the PX500 Series contain static-sensitive parts. To prevent damage to these parts while performing installation, maintenance, or replacement procedures, observe the following precautions:

- Keep the cabinet turned off during all installation, maintenance, and replacement procedures.
- Keep the cabinet power cord connected to a grounded power outlet except when working with AC electrical components.

**Warning:** Avoid contact with the power supplies, EMI filter, and all other AC electrical components while the cabinet is connected to a power outlet.



**Unplug all AC cords to remove power from equipment.**

- Use an antistatic wrist strap when touching internal cabinet components. To use the wrist strap properly, place the band around your wrist and attach the clip to the cabinet frame. Keep the strap on until you are ready to close the cabinet doors.
- Keep static-sensitive parts in their shipping containers until ready for installation.
- Do not place static-sensitive parts on any metal surface. If you need to put down a static-sensitive part, place it inside its protective shipping bag or on a grounded antistatic mat.

- Avoid direct contact with static-sensitive parts. Avoid touching connectors and discrete components.
- Close cabinet door and access panel when not working on the cabinet.
- Be very careful when installing the cabinet or handling components in dry climates or environments where cold weather heating is used. Environments such as these with lower relative humidity have greater potential to produce static electricity.

**Note:** In environments with high potential for static electricity, take additional precautions such as the use of an antistatic smock or a grounded antistatic mat.

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## SDLT Cartridges

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The following section shows you how to label SDLT tape cartridges, as well as setting the write-protect switch and proper orientation.

### Labeling

Attaching a barcode label to each tape cartridge enables the cabinet to identify the cartridge quickly, thereby speeding up inventory time.

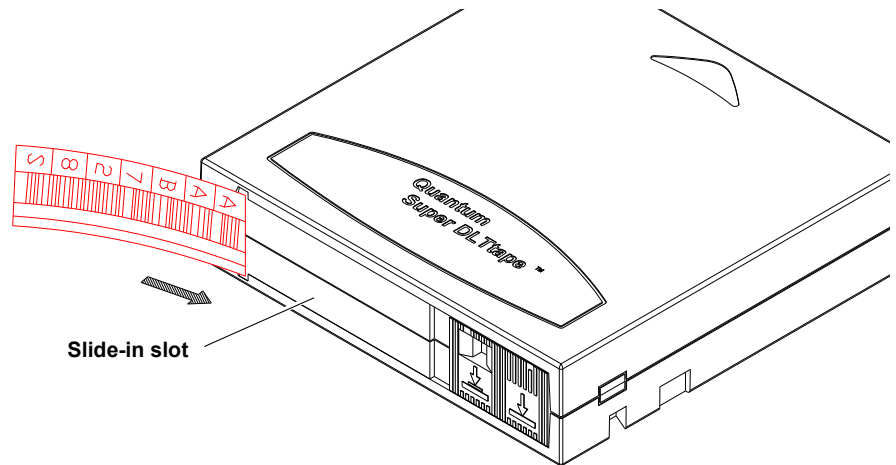
The SDLT cartridge label has eight characters (e.g. AAANNNS#). The first six characters are called the volume identifier which is made up of three alpha characters and three numeric characters. These characters allow each cartridge to have a unique identifier. The last two characters are called the media identifier and indicate the following media types:

- S1 = SDLT 220
- S2 = SDLT 320
- S3 = SDLT 600
- S4 = DLT-S4

**Note:** You cannot choose the sequence of labels inside the bar code label packs. No two packs are ever the same to avoid issues with duplicate bar code IDs.

Place the label in the slide-in slot on the front of the cartridge (see [figure 19](#)).

Figure 19 Inserting a Barcode Label (SDLT)



**Note:** Only use barcode labels that have been designed for cartridges. Do not adhere labels to a cartridge anywhere except the slide-in slot.

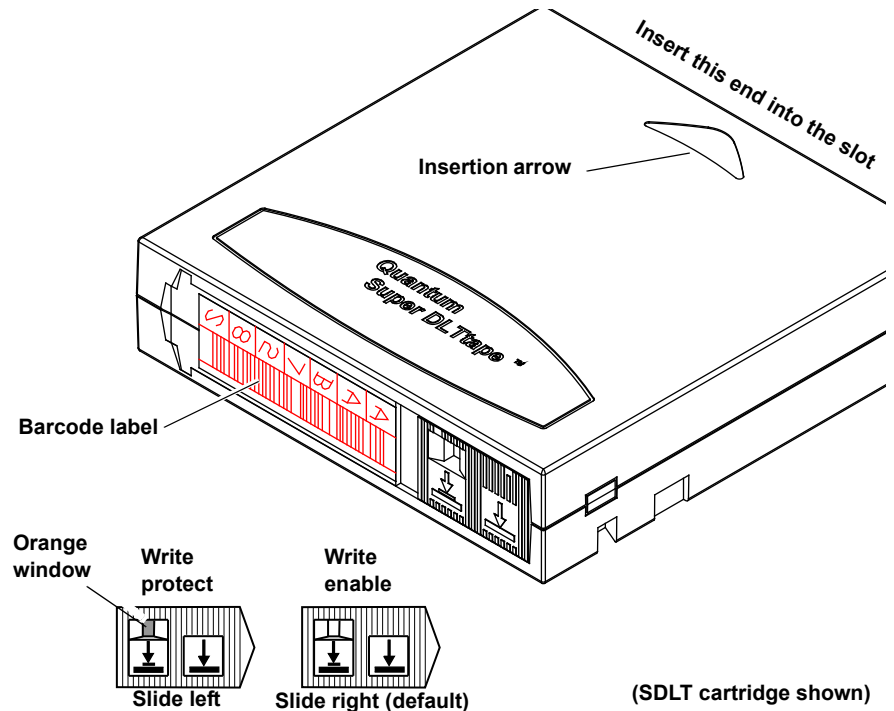
### Setting the Write-Protect Switch

Each tape cartridge has a write-protect switch similar to that shown in [figure 20](#). This switch determines whether new data can be written to the cartridge (*write-enabled*) or whether data on the cartridge is protected from being erased or overwritten (*write-protected*). Set the write-protect switch to enabled when inserting new cartridges into the library. Set the write-protect switch to protected archiving tape cartridges.

### Proper Insertion Orientation

Refer to [figure 20](#) for proper label placement, write protection settings and insertion orientation.

Figure 20 SDLT Cartridges



## LTO Cartridges

LTO tape cartridges are different in size to the SDLT cartridges as well as in the barcode labeling and write-protect switch setting (see [figure 21](#)).

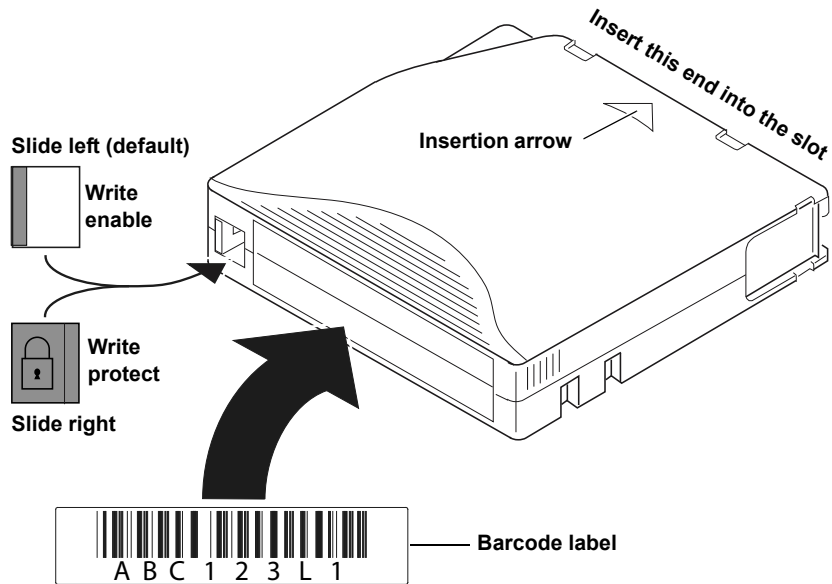
The LTO cartridge label has eight characters (e.g. AAANNL#). The first six characters are called the volume identifier which is made up of three alpha characters and three numeric characters. These characters allow each cartridge to have a unique identifier. The last two characters are called the media identifier and indicate the following media types:

- L1 = LTO generation 1 (LTO)
- L2 = LTO generation 2 (LTO-2)
- L3 = LTO generation 3 (LTO-3)

**Note:** You cannot choose the sequence of labels inside the bar code label packs. No two packs are ever the same to avoid issues with duplicate bar code IDs.

Adhesive-backed barcode labels are used on LTO tape cartridges. Refer to [figure 21](#) for proper label placement, write protection settings and insertion orientation.

Figure 21 LTO Cartridges



**Caution:** LTO tape drive media cannot be degaussed due to the fact that it uses "magnetic servos." Do not attempt to degauss LTO tape drive media. If this media is degaussed, it will no longer work.

## Cleaning Cartridges

Cleaning cartridges are used when a tape drive within the library requires cleaning. When Autoclean is enabled (either through the OCP or remote management screens), the library will automatically clean the tape drive when needed. A fixed bin (see ["Library Models"](#) on page 2 for bin locations) is generally used to store a cleaning cartridge, however, the cartridge can be placed anywhere in the library. When the library completes the inventory, the system stores the cleaning cartridge location so it will be available when a tape drive requires cleaning.

Both SDLT and LTO cleaning cartridge labels begin with CLN (see [figure 22](#) for SDLT and [figure 23](#) for LTO).

Figure 22 SDLT Cleaning  
Cartridges

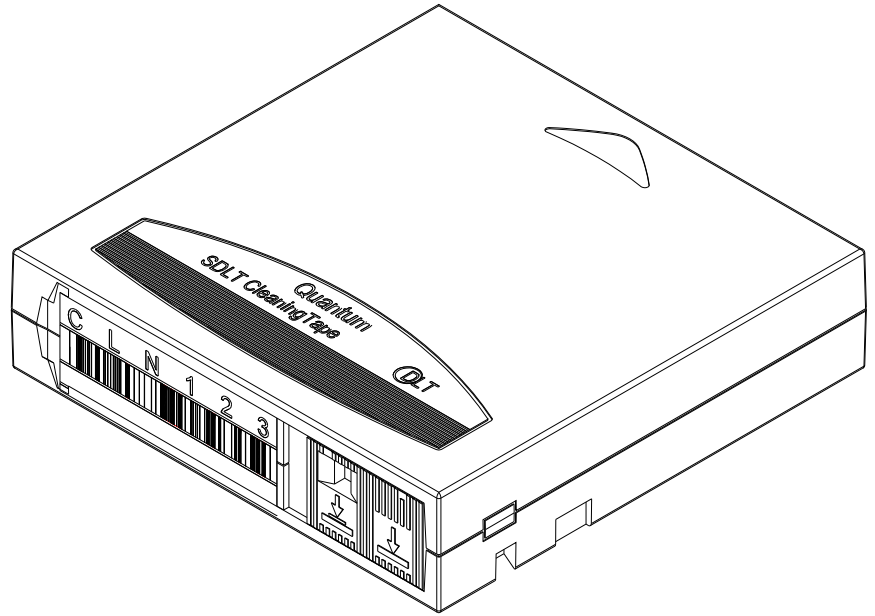
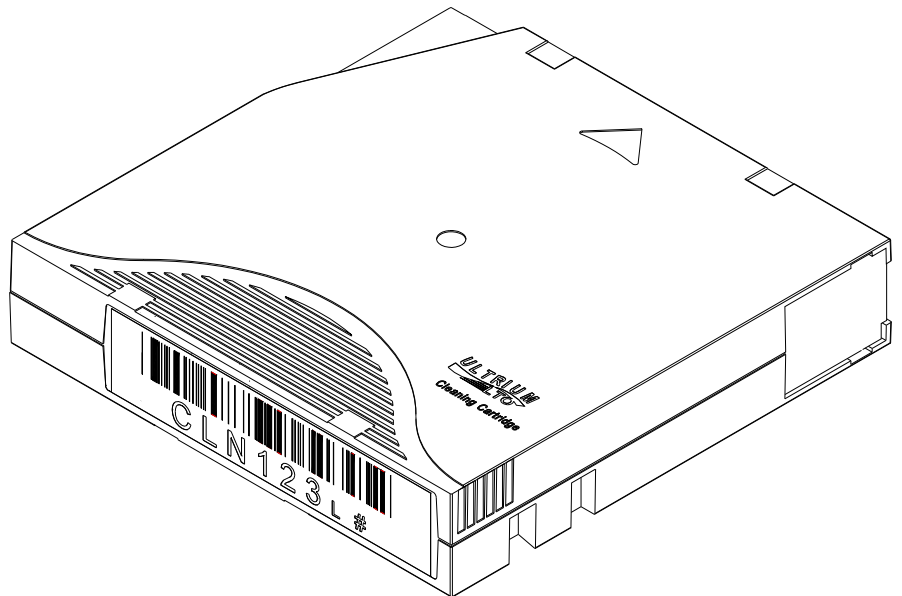


Figure 23 LTO Cleaning  
Cartridges



## Preparing the Library for Operation

To prepare the cabinet for operation:

- [Close the Cabinet Doors and Access Panels](#)
- [Connecting to Host Workstations](#)

### Close the Cabinet Doors and Access Panels

The PX500 Series libraries have doors covering the tape cartridge magazines.

1 Close the front doors until they latch:

- PX502 - see [figure 24](#)
- PX506 - see [figure 25](#)
- PX510 - see [figure 26](#)

Figure 24 Closing the PX502 Front Doors

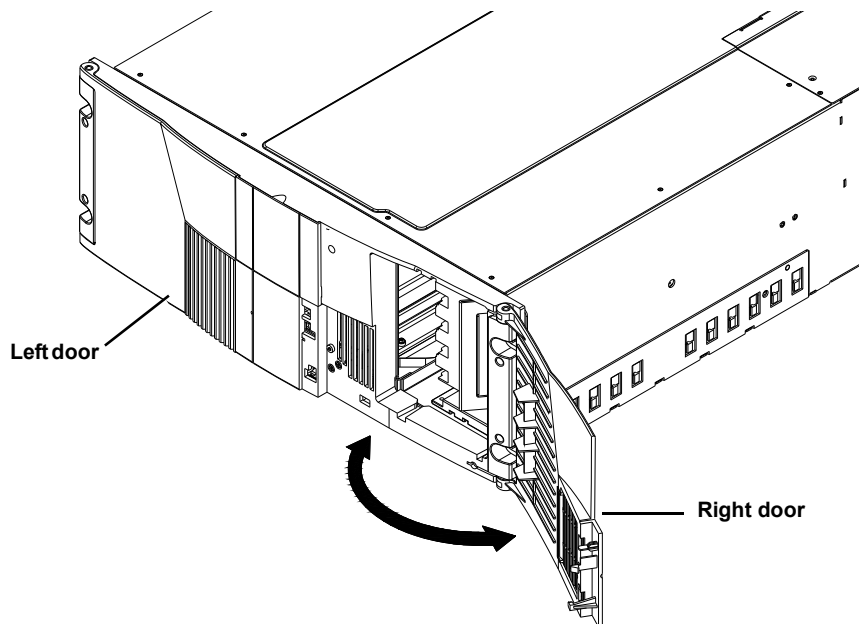


Figure 25 Closing the PX506  
Front Doors

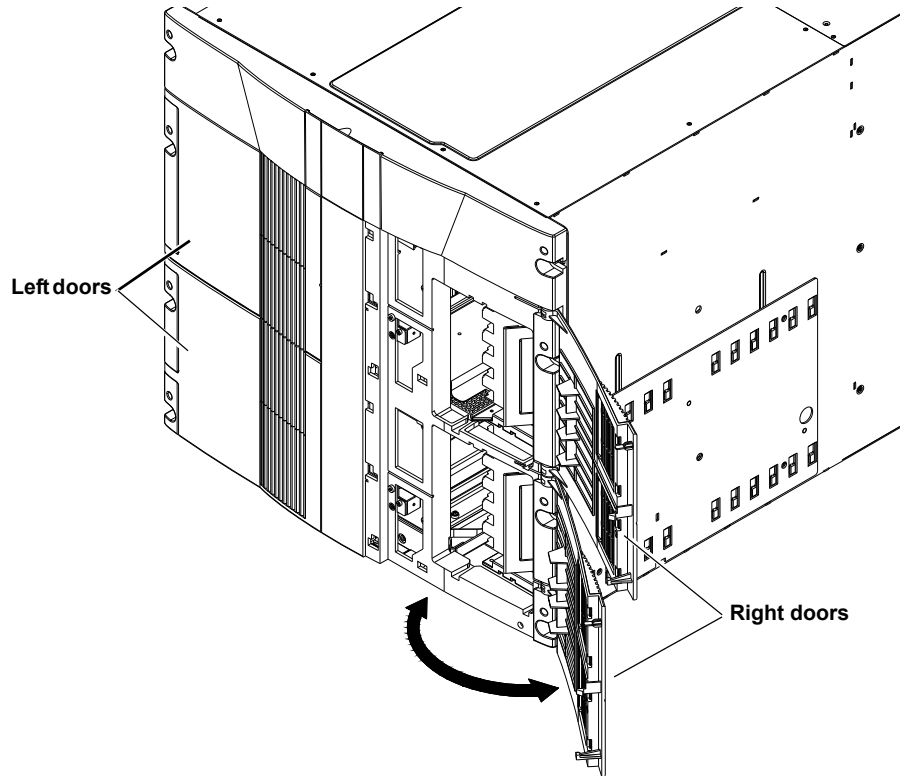
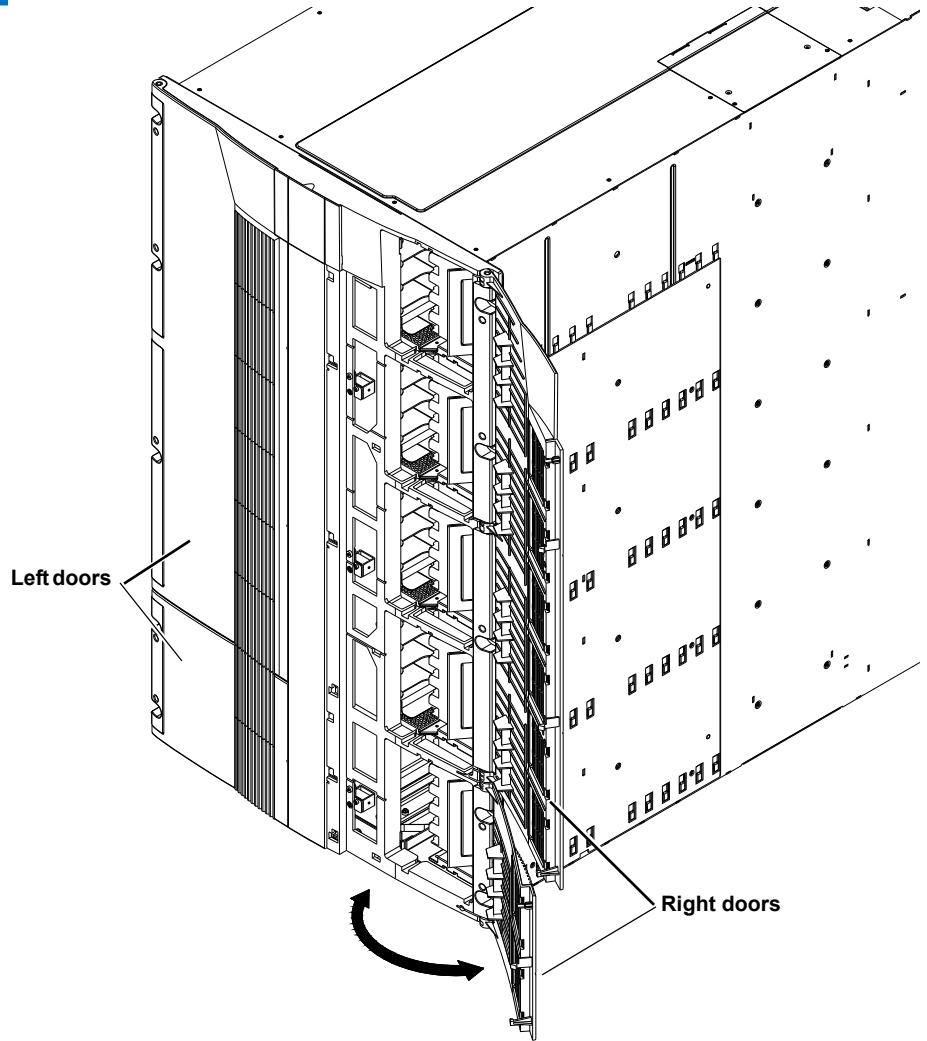




Figure 26 Closing the PX510  
Front Doors



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## Connecting to Host Workstations

---

Connect the SCSI or Fibre Channel cables as shown in the following figures:

### PX502 Cabling Configurations

- [PX502 Cabling Configuration \(SCSI\)](#)
- [PX502 Cabling Configuration \(Surrogate\)](#)
- [PX502 Cabling Configuration \(Native Fibre Channel\)](#)

### PX506 Cabling Configurations

- [PX506 Cabling Configuration \(SCSI\)](#)
- [PX506 Cabling Configuration \(Native Fibre Channel\)](#)

### PX510 Cabling Configurations

- [PX510 Cabling Configuration \(SCSI\)](#)
- [PX510 Cabling Configuration \(Native Fibre Channel\)](#)

**Note:** Quantum ships sufficient SCSI cables and terminators with the libraries to set up two-drives per SCSI bus.

### Stacked Configuration

- [PX502 Stacked Cabling Configuration](#)

Figure 27 PX502 Cabling Configuration (SCSI)

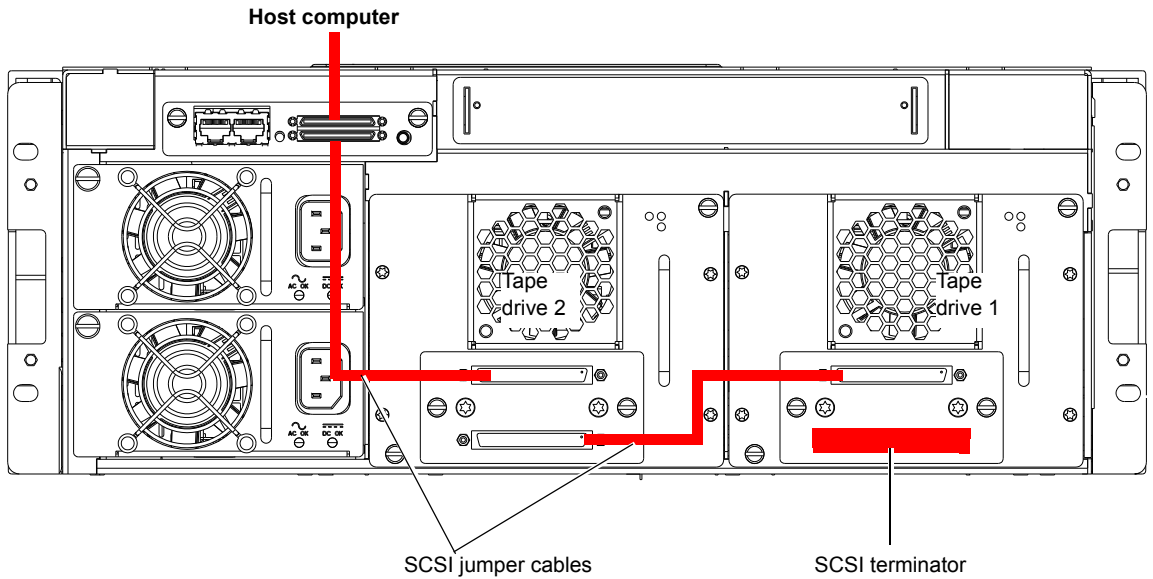


Figure 28 PX502 Cabling Configuration (Surrogate)

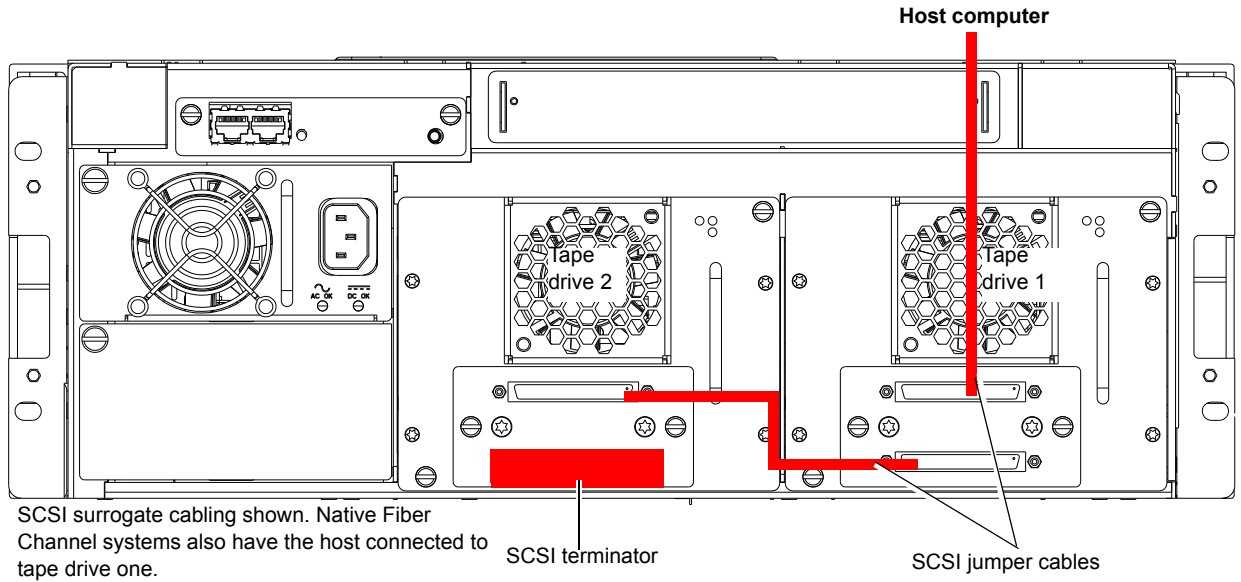


Figure 29 PX502 Cabling Configuration (Native Fibre Channel)

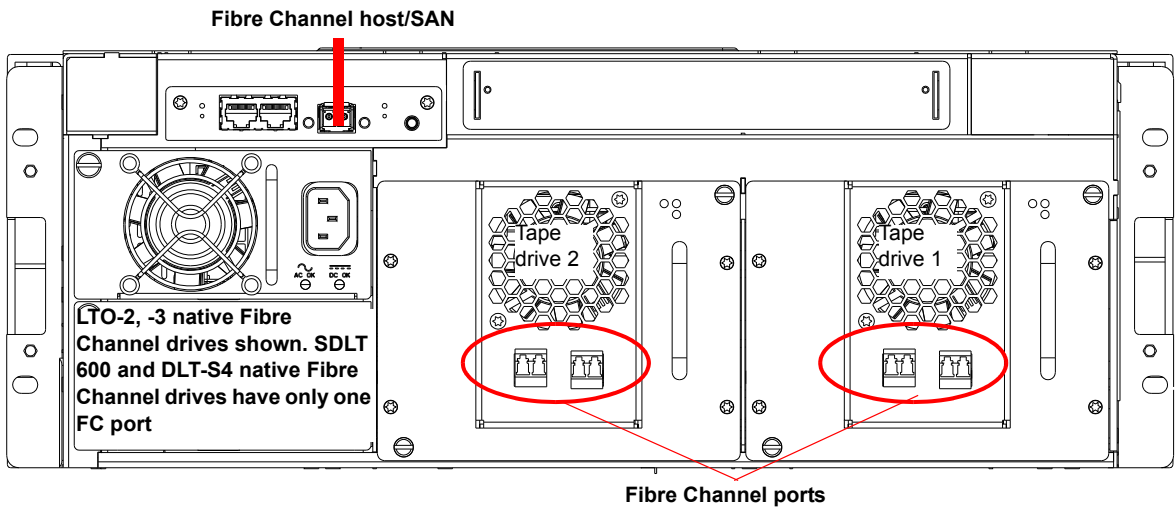


Figure 30 PX506 Cabling Configuration (SCSI)

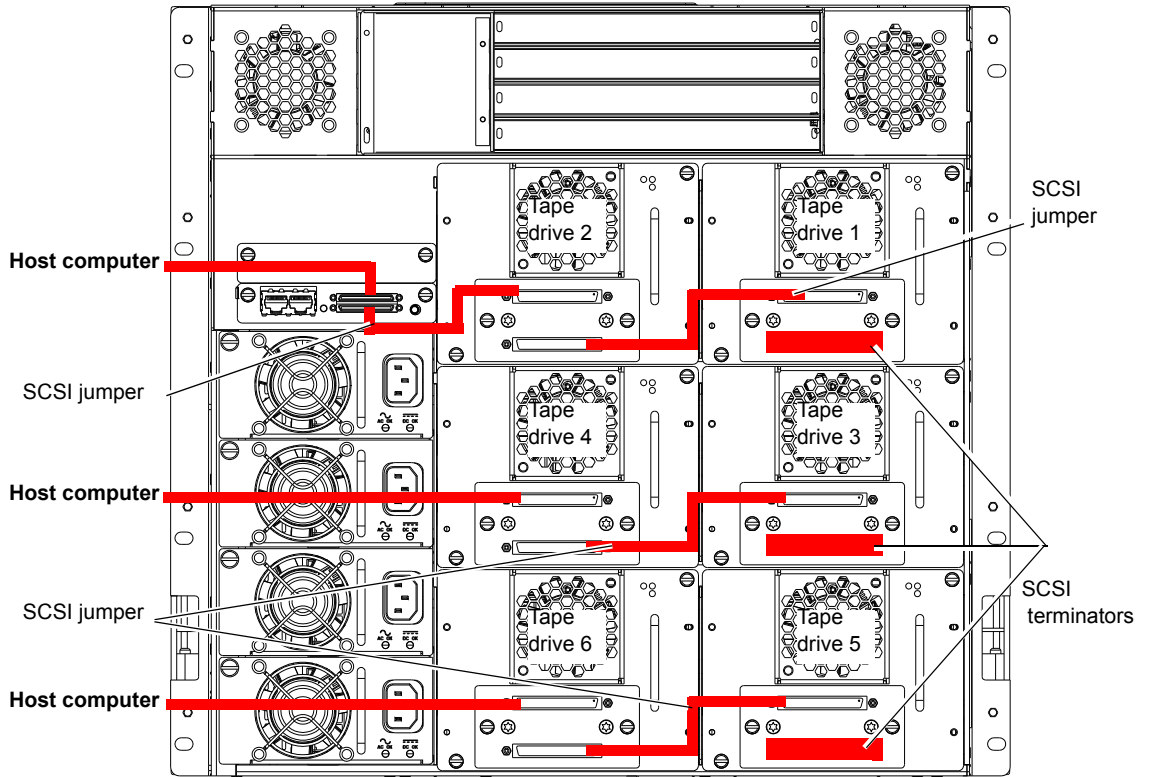


Figure 31 PX506 Cabling  
Configuration (Native Fibre  
Channel)

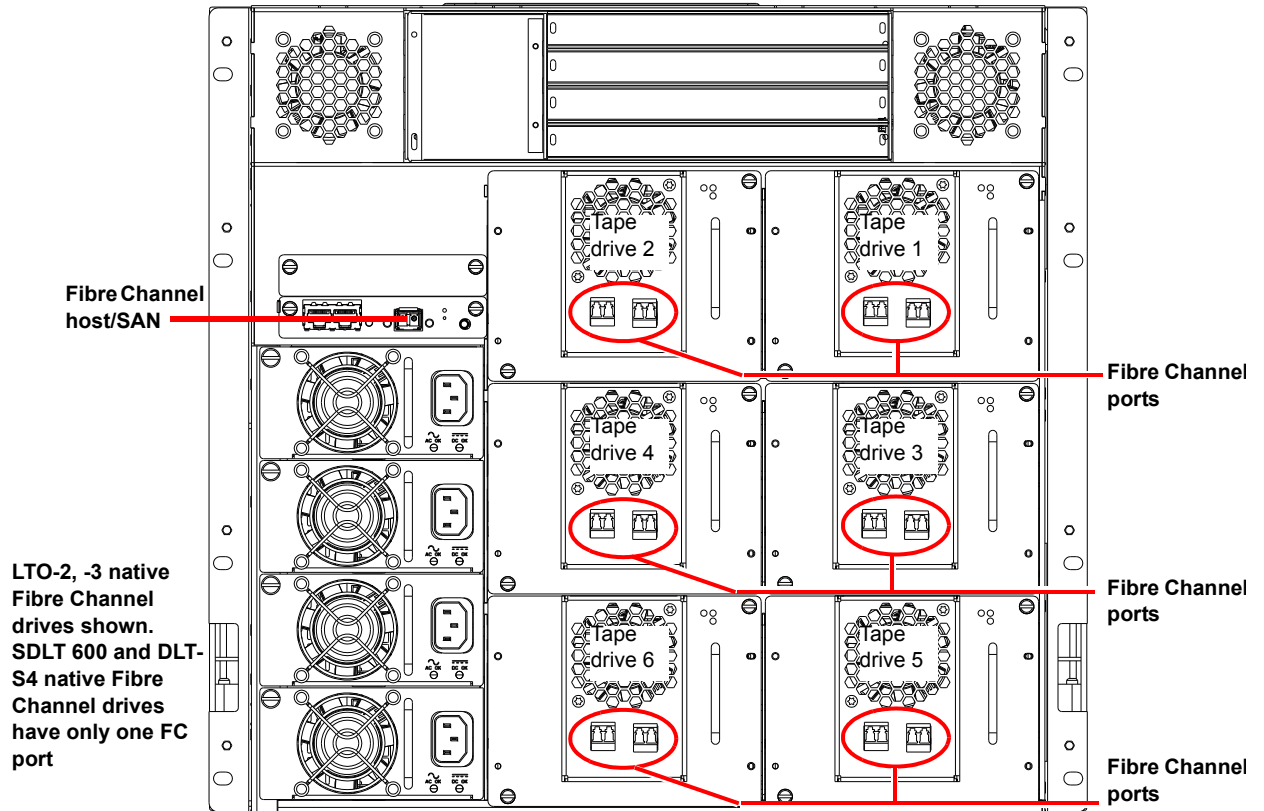


Figure 32 PX510 Cabling Configuration (SCSI)

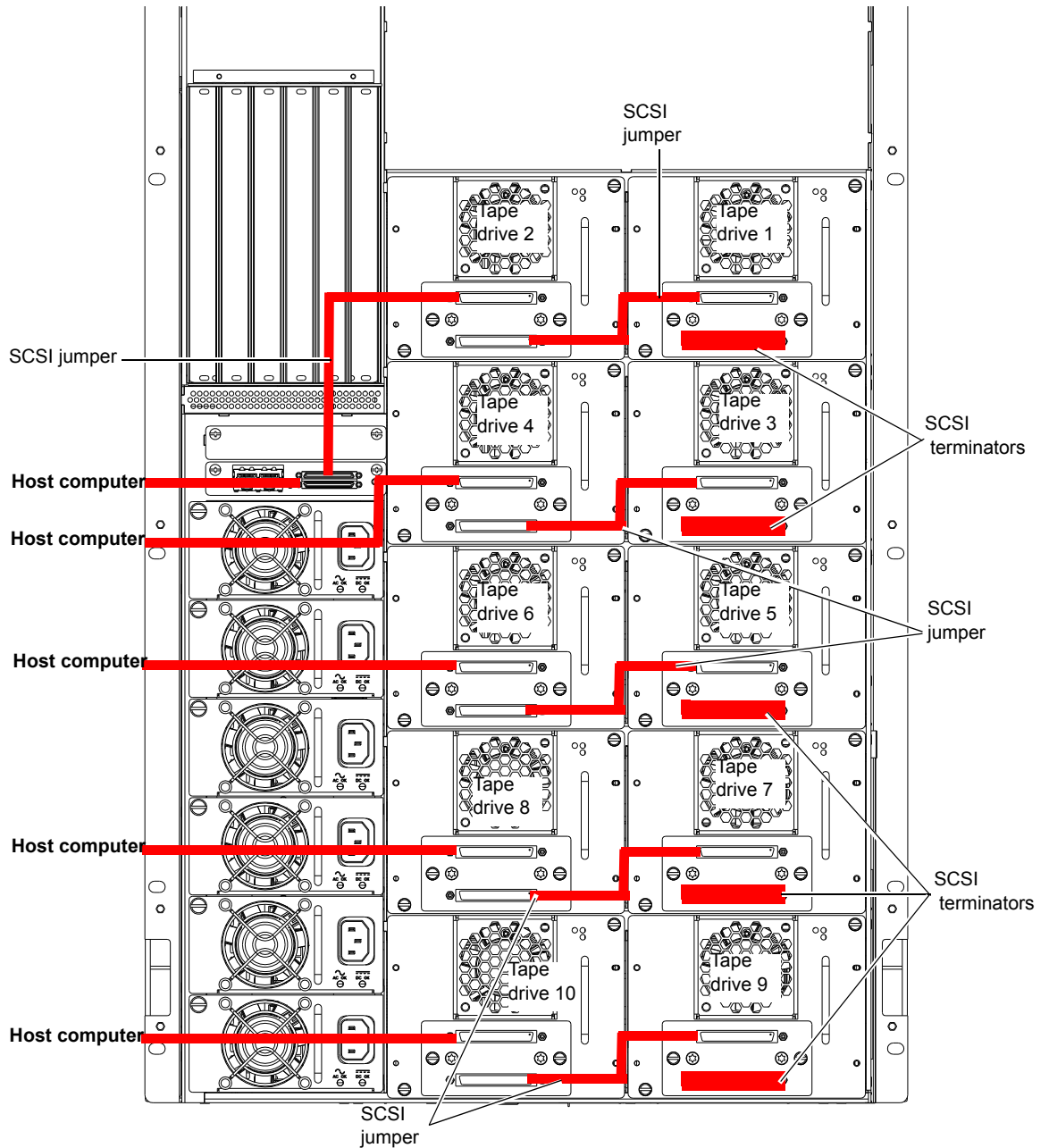


Figure 33 PX510 Cabling Configuration (Native Fibre Channel)

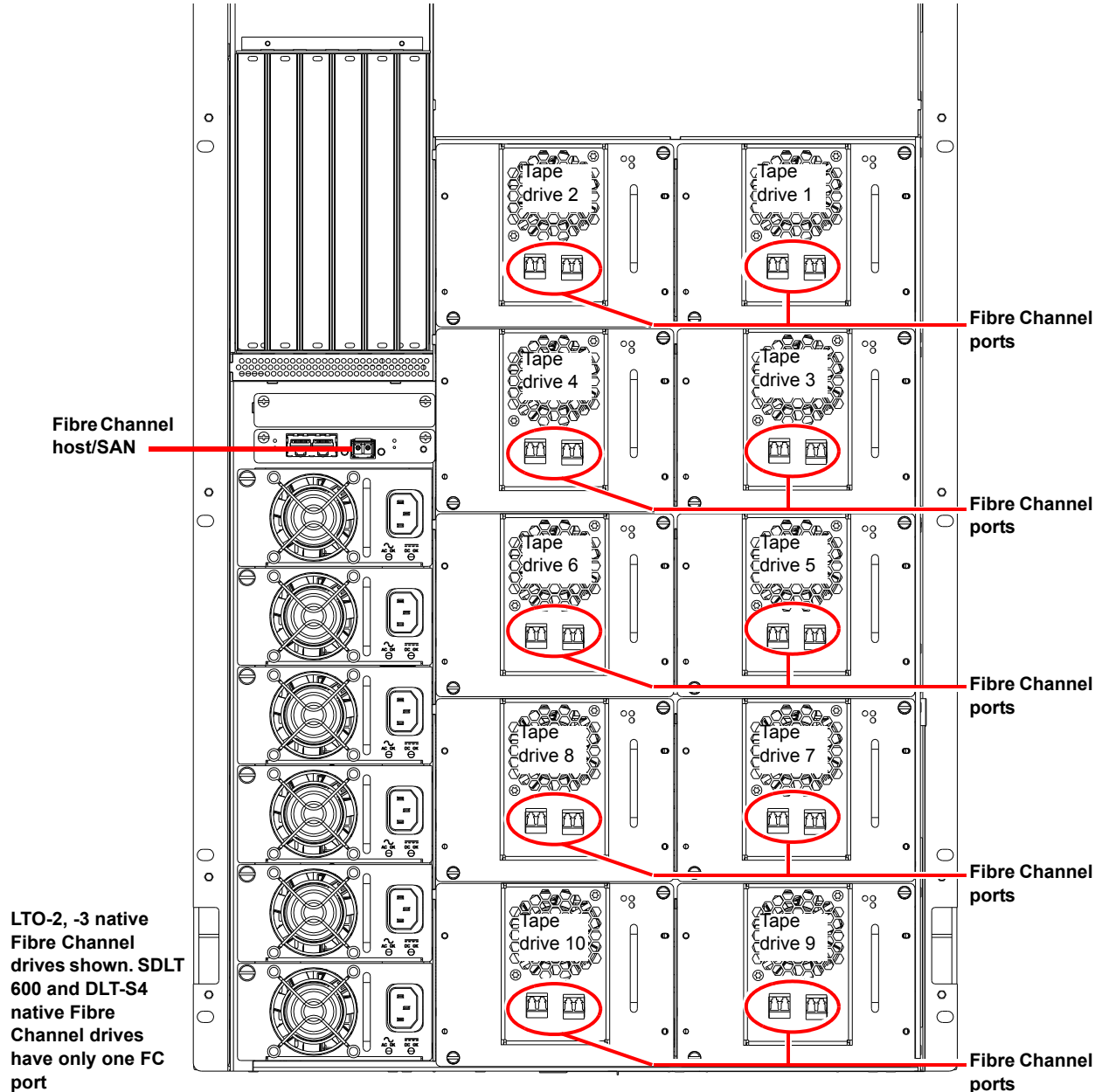
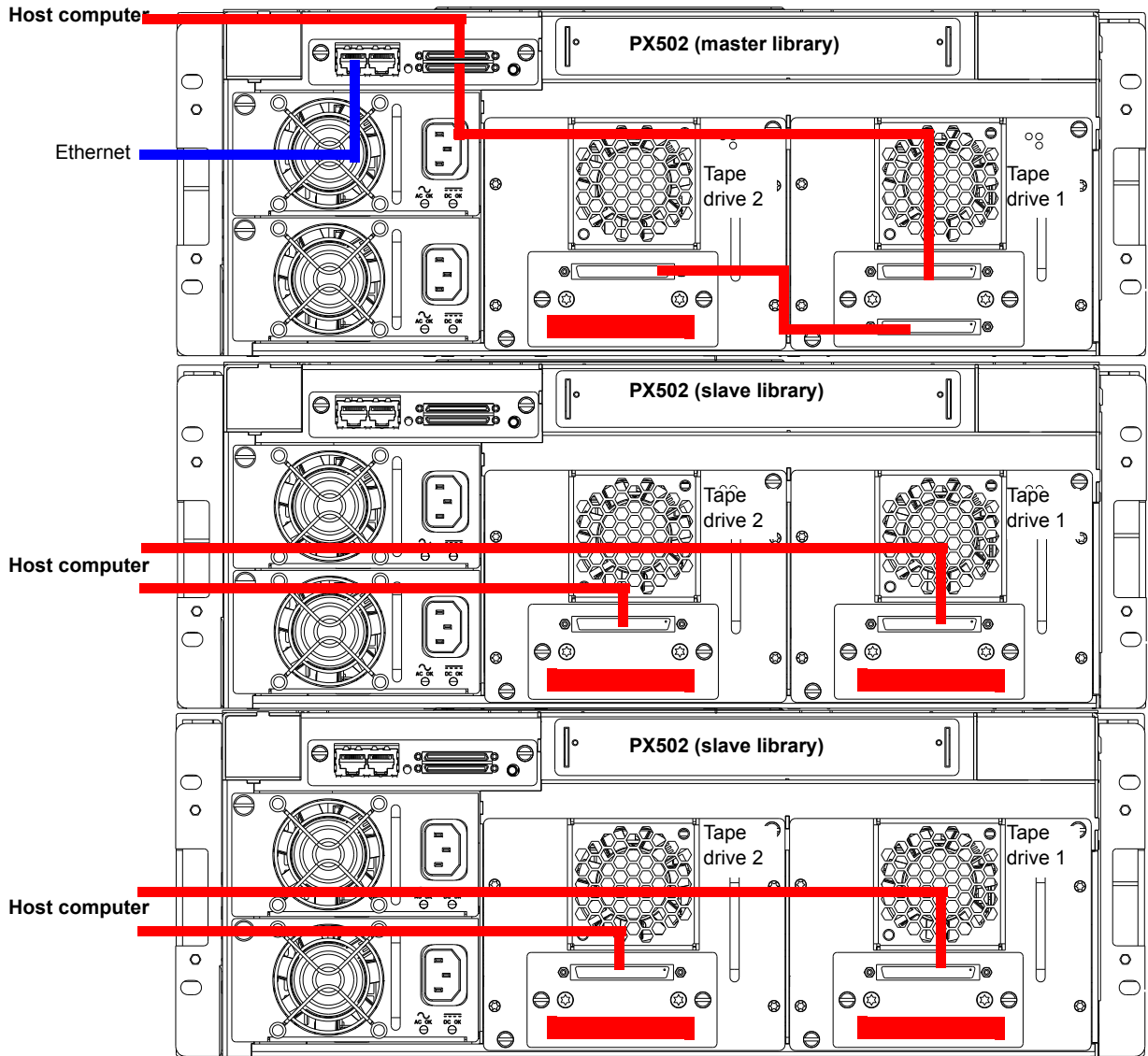




Figure 34 PX502 Stacked  
Cabling Configuration



**The library host and Ethernet network are connected only to the Master library.**

## Turning the Library On and Off

This section explains:

- [Turning On the Library](#)
- [Turning Off the Library](#)
- [Placing the Library On-line or Off-line](#)

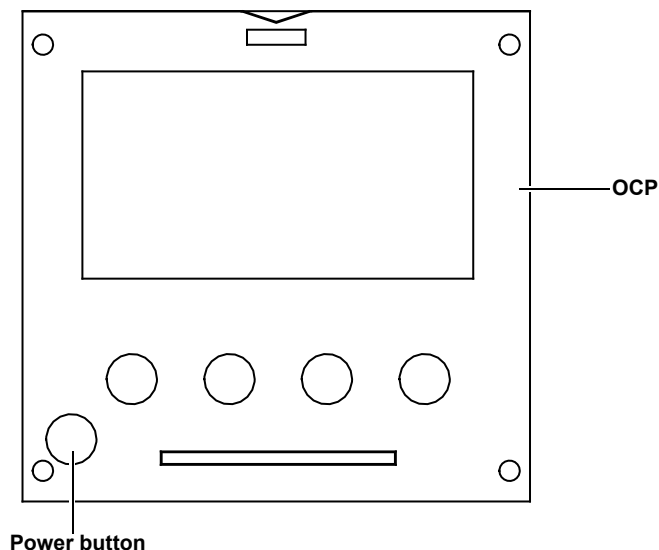
### Turning On the Library

To turn on the library:

- 1 Verify that:
  - Power cables are firmly in place
  - All doors are closed
- 2 Push the power button located in the lower left-hand corner of the OCP (see [figure 35](#)).

During the power up sequence, the library performs an inventory. The power up sequence can take several minutes.

Figure 35 Turning On the Library



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## Turning Off the Library

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To turn off the library:

- 1 Push the power button located on the front of the library and hold for approximately 1 second (see [figure 35](#)).

The library begins the shutdown sequence. The shutdown sequence can take up to two minutes to complete.

---

## Placing the Library On-line or Off-line

---

With the library turned on, press the button corresponding to **Ops** on the OCP to access the **Operations** screen. Select **Library Operations** and then **Library on/offline** to turn the library off-line. Select Yes or No to confirm the library state change. For more information on the **Operations** screen, see "[Library Operations](#)" on page 68.

---

# Using the OCP

The operator control panel (OCP) is located on the front of the library. The menus on the OCP allow you to obtain information about the library, execute library commands, and test library functions. Before using the OCP to perform library functions, familiarize yourself with the:

- [Home Screen](#)
- [OCP Buttons](#)

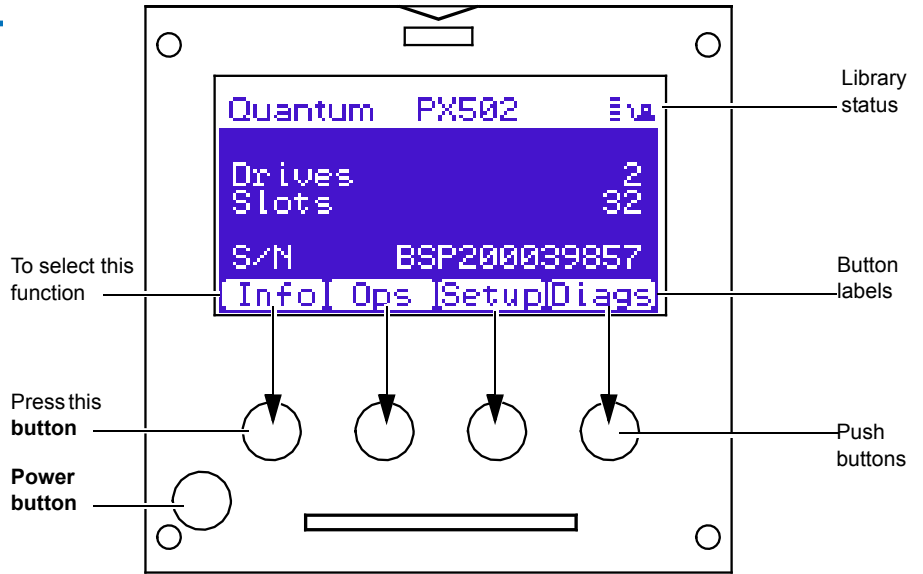
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## Home Screen

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The first screen the OCP displays after library initialization is the main screen. This screen displays library status and provides information on the number of tape drives, slots, and serial number (see [figure 2](#)).

## OCP Home Screen



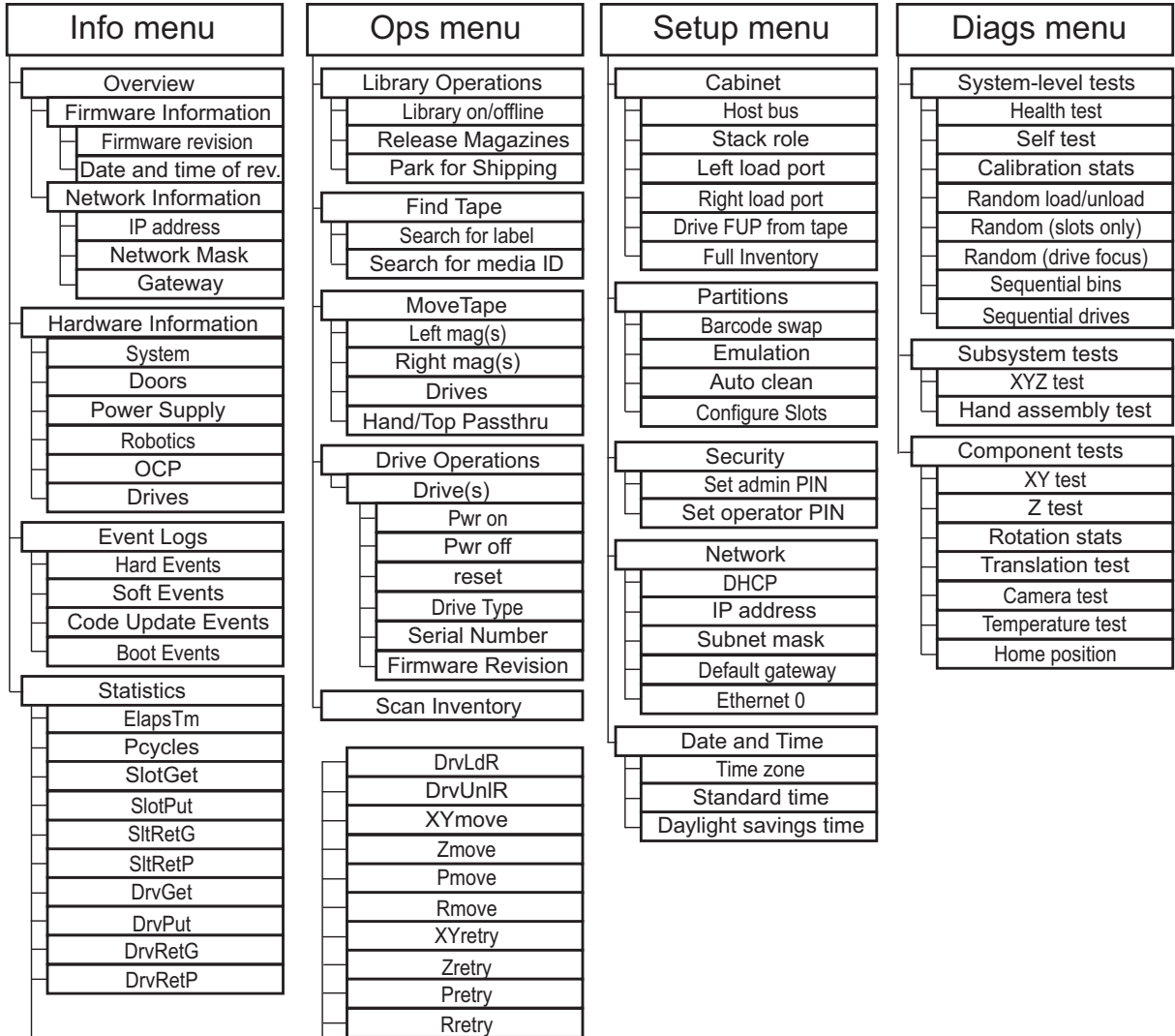
## OCP Buttons

At the bottom of each OCP screen are four button labels. These labels indicate the functions of the four push buttons below the OCP. To select a function, press the push button directly below the button label on the OCP screen. The OCP also contains a power button for turning the library on and off.

## OCP Components

The OCP allows the user to perform various functions on the Quantum PX500 Series library. [Table Figure 36](#) provides a list of the OCP functionality available from the **Home** screen (see [figure 2](#)).

Figure 36 OCP Component Tree



The following sections provide information on each function available from the Quantum PX500 Series OCP:

- [Info Screen](#)
- [Operations Screen](#)
- [Setup Screen](#)
- [Diags Screen](#)

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## Info Screen

---

The **Info** screen provides access to library information such as hardware status, event logs, and statistics.

To access the **Info** screen, press **Info** from the **Home** screen. The OCP displays the **Info** screen (see [figure 37](#)):

---

Figure 37 Info Screen



The **Info** screen provides the following choices:

- [Overview Information](#)
- [Hardware Information](#)
- [Event Logs](#)
- [Statistics Information](#)

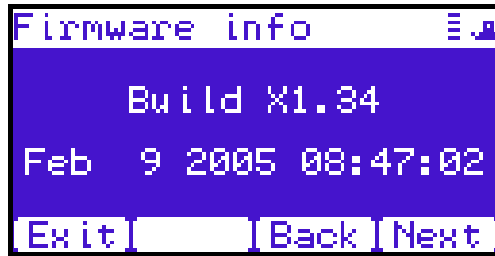
### Overview Information

To view overview information:

- 1 From the **Info** screen, use the up and down arrows to highlight **Overview** and press **Enter**.

The **Overview** screen displays (see [figure 38](#)):

Figure 38 Overview Screen



The **Overview** screen displays the following information about the library:

- Firmware revision
  - Time and date the firmware was built
- 2 Press **Back** or **Next** to review the network information such as the current IP address, network mask, and gateway information.
  - 3 When you are finished viewing overview information, press **Exit** to return to the **Info** screen.

## Hardware Information

To view hardware information:

- 1 From the **Info** screen, use the up and down arrows to highlight **Hardware** and press **Enter**.

The **Hardware** screen displays (see [figure 39](#)):

Figure 39 Hardware Screen



The **Hardware** screen displays the following information (see [table 40](#)):

Figure 40 Hardware Information

Hardware Information	Description
System	System information displays the overall sensor details for the library.
Doors	Door information displays the door sensor details.
Power Supply	Power supply information displays the power supply sensor details.
Robotics	Robotics information displays the robotic sensor details.
OCP	OCP information displays the OCP sensor details.
Drives	Drives information displays the tape drive sensor details.



- 2 Use the up and down arrows to highlight the information you wish to display and press **Enter**.
- 3 When you are finished viewing the hardware information, press **Exit** to return to the **Info** screen.

## Event Logs

To view the event logs:

- 1 From the **Info** screen, use the up and down arrows to highlight **Event Logs** and press **Enter**.

The **Event Log** screen displays (see [figure 41](#)).

Figure 41 Event Log Screen



- 2 Use the up and down arrows to highlight the event type you wish to view (**Hardware**, **Software**, **Code updates**, or **Boot events**).

The OCP displays the event severity list.

- 3 Use the up and down arrows to highlight the severity type you wish to view (**All**, **Critical**, **Warning**, and **Informational**).

The OCP displays the event or list of events in the specific severity category. Use the Back and Next buttons to move between events.

- 4 When you are finished viewing the event logs, press **Exit** to return to the **Info** screen. Refer to [chapter 4](#) on page 150 for detailed event information.

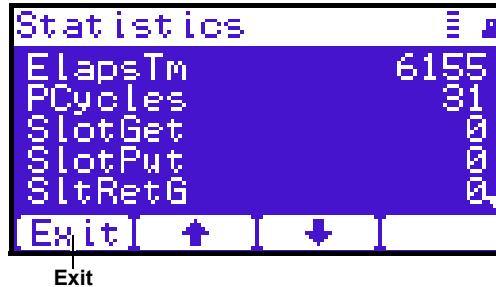
## Statistics Information

To view statistics information:

- 1 From the **Info** screen, use the up and down arrows to highlight **Statistics** and press **Enter**.

The **Statistics** screen displays (see [figure 42](#)):

Figure 42 Statistics Screen



The **Statistics** screen displays the following information about the library:

- ElapsTm – seconds since boot.
- PCycles – total number of power cycles or reboots.
- SlotGet – count of cartridge retrievals from slots.
- SlotPut – count of cartridge deliveries to slots.
- SltRetG – count of retries in retrievals from slots.
- SltRetP – count of retries in deliveries to slots.
- DrvGet – count of cartridge retrievals from drives.
- DrvPut – count of cartridge deliveries to drives.
- DrvRetG – count of retries in retrievals from drives.
- DrvRetP – count of retries in deliveries to drives.
- DrvLdR – count of retries for cartridge loads in drives.
- DrvUnlR – count of retries for cartridge unloads in drives.
- XYmove – count of horizontal moves.
- Zmove – count of vertical moves.
- Pmove – count of extension moves.
- Rmove – count of rotation moves.

- XYretry – count of horizontal move retries.
- Zretry – count of vertical move retries.
- Pretry – count of extension move retries.
- Rretry – count of rotation move retries.

When you are finished viewing the statistics information, press **Exit** to return to the **Info** screen.

---

## Operations Screen

---

The **Operations (Ops)** screen allows the user to view the status and issue commands to the cabinet and tape drives.

To access the **Operations** screen, press **Ops** from the **Home** screen. The OCP displays the **Operations** screen (see [figure 43](#)):

---

Figure 43 Operations Screen



Exit

The **Ops** screen provides the following choices:

- [Library Operations](#)
- [Find Tape](#)
- [Move Tape](#)
- [Drive Operations](#)
- [Scan Inventory](#)

### Library Operations

To view library operations information:

- 1 From the **Ops** screen, use the up and down arrows to highlight **Library Operations** and press **Enter**.

The **Library Operations** screen displays (see [figure 44](#)):

Figure 44 Library Operations Screen



The following library operations options are available (see [table 12](#)):

Table 12 Library Operations Options

Library Operations Options	Description
Library on/offline	<p>When the cabinet is <b>online</b>, the library is ready for host communication and for backup jobs to proceed. When the cabinet is <b>offline</b>, the host is no longer able to communicate with the library. Self tests, diagnostics, and inventory can only be performed when the library is <b>offline</b>.</p> <p>Use the up and down arrows to highlight <b>Library on/offline</b> and press <b>Enter</b> to toggle the library <b>online</b> or <b>offline</b>. Press <b>Yes</b> to confirm the command or <b>No</b> to cancel.</p>
Release magazines	<p>Use the up and down arrows to highlight <b>Release magazines</b> and press <b>Enter</b> to view the release magazines screen. Select the magazine you wish to release and press <b>Enter</b>. Press <b>Exit</b> to cancel.</p> <p><b>Note:</b> If there are no magazines installed or if the magazines are configured as load ports, this line will not display.</p>

Library Operations Options	Description
Park for shipping	<p><b>Note:</b> You must remove all tape cartridges from the library prior to parking the library robotics for shipment.</p> <p>Use the up and down arrows to highlight <b>Park for shipping</b> and press <b>Enter</b> to move the robot to a safe position for transport. After the robot is in it's final position, the library shuts down. After the library is shut down, you must complete the repacking procedure before transporting the library (see <a href="#">appendix D</a> on page 229).</p>

- 2 When you are finished viewing the library operations information, press **Exit** to return to the **Ops** screen.

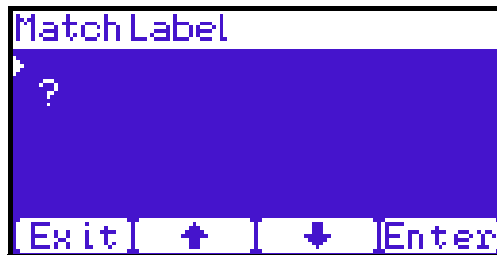
### Find Tape

To view media or tape cartridge information:

- 1 From the **Ops** screen, use the up and down arrows to highlight **Find Tape** and press **Enter**.

The **Match Label** screen displays (see [figure 45](#)):

Figure 45 Match Label Screen



- 2 Use the up and down arrows to cycle through the alpha, numeric, or wildcard (?) characters to enter the tape cartridge label. After each character, press **Enter**.

If a match is found, the cartridge type and location displays.

- 3 If more than one match is found, a list of matching cartridges displays. Select the tape cartridge from the list and press **Enter**.

The tape cartridge type and location displays.

## Move Tape

To view the move tape screen:

- 1 From the **Ops** screen, use the up and down arrows to highlight **Move Tape** and press **Enter**.

The **Move From** screen displays (see [figure 46](#)):

Figure 46 Move From Screen



To move a tape cartridge within the library:

**Note:** If this is a master library in a multiple library stack, you cannot move cartridges from one library into another. You can only move cartridges manually from one library into another via the remote management pages (see [chapter 3](#) on page 85).

- 2 Use the up and down arrows to select a magazine, tape drive, or fixed slot group and press **Enter**.

The **Move from** screen displays a list of storage bins within the selected magazine, tape drive, fixed slot group, and hand/top passthru.

- 3 Use the up and down arrows to select a tape cartridge from an occupied bin and press **Enter**.

The **Move** to screen displays a list of magazine, tape drive, or fixed slot groups.

- 4 Use the up and down arrows to select a magazine, tape drive, or fixed slot group to receive the cartridge and press **Enter**.

The **Move to** screen displays a list of storage elements within the selected magazine, tape drive, or fixed slot group.

- 5 Use the up and down arrows to select an empty bin to receive the tape cartridge and press **Enter**.

The **Move in progress** screen displays. When the tape cartridge has completed the move, a **Success** screen displays.

- 6 When you are finished moving tape cartridges, press **Exit** to return to the **Ops** screen.

## Drive Operations

To perform a drive operation:

- 1 From the **Ops** screen, use the up and down arrows to highlight **Drive Operations** and press **Enter**.

The **Drive Operations** screen displays (see [figure 47](#)):

Figure 47 Drive Operations Screen



- 1 Use the up and down arrows to select a tape drive and press **Enter**.

The following drive options are available (see [table 13](#)):

**Caution:** Ensure that the tape drive does not contain a tape cartridge prior to powering down the tape drive.

Table 13 Drive Options

Device Options		Description
Drive	Pwr on	This option powers on a specific tape drive within the cabinet.
	Pwr off	This option shuts down a specific tape drive within the cabinet in preparation for tape drive removal.
	Reset	This option re initializes a specific tape drive within the cabinet.

- 2 When you are finished viewing tape drive information, press **Exit** to return to the **Ops** screen.

### Scan Inventory

To perform an inventory of the library:

- 1 From the **Ops** screen, use the up and down arrows to highlight **Scan Inventory** and press **Enter**.

The **Success** screen displays. Press **Done** to complete.

### Setup Screen

The **Setup** screen allows the user to view or edit various library settings such as date and time, network and host bus information.

To access the **Setup** screen, press **Setup** from the **Home** screen. The OCP displays the **Setup** screen (see [figure 43](#)):

Figure 48 Setup Screen



Enter



The **Setup** screen provides the following choices:

- [Cabinet Setup](#)
- [Partitions Setup](#)
- [Security](#)
- [Network](#)
- [Date and Time](#)

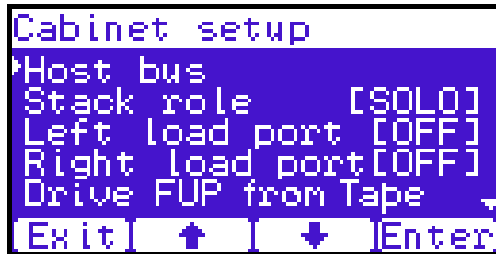
### Cabinet Setup

To view the cabinet setup screen:

- 1 From the **Setup** screen, use the up and down arrows to highlight **Cabinet Setup** and press **Enter**.

The **Cabinet Setup** screen displays (see [figure 49](#)):

Figure 49 Cabinet Setup Screen



The **Cabinet Setup** screen displays the following options (see [table 14](#)):

Table 14 Cabinet Setup

Cabinet Setup	Description
Host bus	Select the host bus option to view or edit the SCSI IDs for the changer (library) and tape drives. The Host bus option also allows you to set the Fibre Channel settings for any Fibre Channel tape drives installed. Loop ID, topology, and speed for each tape drive can be set.

<b>Cabinet Setup</b>	<b>Description</b>
Stack role	Select the stack role option to view or set the library stack role (stand alone, master, or slave).
Left load port	Select the left load port options to enable/disable the left load port and also to designate one column or the entire magazine as a load port.
Right load port	Select the right load port options to enable/disable the right load port and also to designate one column or the entire magazine as a load port.
Drive FUP from tape	Select the magazine or fixed that contains the firmware update cartridge (FUP) and then the specific tape drive to update. The library must be offline to update the tape drive firmware.
Full Inventory	When full inventory is on, the library will complete a full inventory of the tape cartridges whenever a door is opened. When full inventory is off and a load port is accessed, the library will only inventory the load port and not the entire library.

- 2 When you are finished viewing the cabinet setup information, press **Exit** to return to the **Setup** screen.

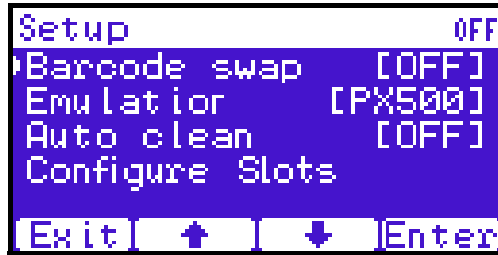
### Partitions Setup

To view or edit the partition information:

- 1 From the **Setup** screen, use the up and down arrows to highlight **Partitions** and press **Enter**.

The **Partitions Setup** screen displays (see [figure 50](#)):

Figure 50 Library Setup Screen



The **Partitions Setup** screen displays the following options (see [table 15](#)):

Table 15 Library Setup

Partitions Setup	Description
Barcode swap	Select the barcode swap to change the barcode swap option (enable/disable). When enabled, the media type prefix is swapped from the back of barcode to the beginning.
Emulation	Select the emulation option to change the library emulation mode. Emulation options are: PX500 or P2000.
Auto clean	Select the auto clean option to change the library autoclean mode (enable/disable). When enabled, the library will automatically load a cleaning cartridge when a tape drive requests a cleaning.
Configure Slots	The configured slots option allows you to designate the number of slots available and reported to the host. Use the up and down arrows to highlight <b>Configure Slots</b> and press <b>Enter</b> . Enter the number of configured slots and press <b>Enter</b> . The library will reconfigure with the new slot count.

- 2 When you are finished viewing/editing the library setup information, press **Exit** to return to the **Setup** screen.

## Security

To view or edit the security information:

- 1 From the **Setup** screen, use the up and down arrows to highlight **Security** and press **Enter**.

The **Security** screen displays (see [figure 51](#)):

Figure 51 Security Screen



The **Security** screen displays the following options (see [table 15](#)):

Table 16 Security Setup

Security Setup	Description
Set admin PIN	The admin PIN allows access to all areas of the OCP. Select <b>Set admin PIN</b> and use the up and down arrows to cycle through the PIN numbers. Press <b>Enter</b> to accept each digit and press <b>Enter</b> twice after the last digit of the PIN. You must verify the PIN number. The admin PIN can be 0 to 8 characters long, numbers only.
Set operator PIN	The operator PIN only allows access to the <b>Info</b> or <b>Ops</b> menus of the OCP. The operator cannot change any library settings. Select <b>Set operator PIN</b> to set the operator PIN. use the up and down arrows to cycle through the PIN numbers. Press <b>Enter</b> to accept each digit and press <b>Enter</b> twice after the last digit of the PIN. You must verify the PIN number. The operator PIN can be 0 to 8 characters long, numbers only.

**Note:** OCP passwords are independent of the remote management passwords.

- 2 When you are finished viewing/editing the security setup information, press **Exit** to return to the **Setup** screen.

## Network

To view or edit the network information:

- 1 From the **Setup** screen, use the up and down arrows to highlight **Network** and press **Enter**.

The **Network** screen displays (see [figure 50](#)):

Figure 52 Network Screen



The **Network** screen allows you to view or edit the following network settings:

**Note:** The network settings (IP address, subnet mask, and default gateway) are only active when DHCP is disabled.

- DHCP (default setting)
  - IP address
  - Subnet mask
  - Default gateway
  - Ethernet 0
- 2 Use the up and down arrows to select the network setting you wish to view or edit and press **Enter**.

- a To enable/disable DHCP, press **Yes** to enable DHCP or **No** to disable DHCP. If your library is not connected to a network which uses a DHCP server to assign IP information, disable this function
- b To set the IP address, subnet mask, and gateway, use the up and down arrows to select the appropriate number and press **Enter** to accept.

**Note:** For the network information such as the IP address to be active, the library must reboot. To reboot the library, see [“Reboot Library”](#) on page 141.

- 3 When you are finished viewing/editing the network information, press **Exit** to return to the **Setup** screen.

## Date and Time

To view or edit the date and time information:

- 1 From the **Setup** screen, use the up and down arrows to highlight **Date and Time** and press **Enter**.

The **Date and Time** screen displays (see [figure 53](#)):

Figure 53 Date and Time Screen



- 2 Use the up and down arrows to view or edit the date and time information. Press **Enter** to advance to the next choice. After you have edited the final setting (seconds), press **Save** to accept the new settings.
- 3 When you are finished viewing/editing the date and time information, press **Exit** to return to the **Setup** screen.

---

## Diags Screen

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The **Diagnostics** screen allows the user to perform diagnostic tests on the library.

To access the **Diagnostics** screen, press **Diags** from the **Home** screen. The OCP displays the **Diagnostics** screen (see [figure 54](#)):

---

Figure 54 Diagnostic Screen



The **Diagnostics** screen provides the following choices:

- [System-level Tests](#)
- [Component Tests](#)
- [Subsystem Tests](#)

### System-level Tests

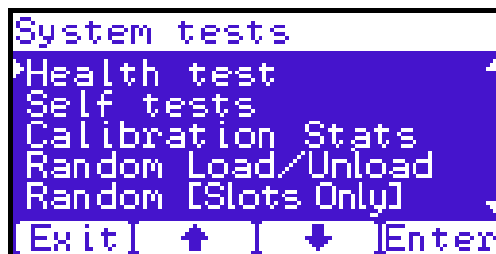
To execute a system-level test:

- 1 From the **Diags** screen, use the up and down arrows to highlight **System-level Test** and press **Enter**.

The **System-level Test** screen displays (see [figure 55](#)):

---

Figure 55 System-level Test Screen



The **System-level Test** screen provides the following diagnostic tests:

- Health test
  - Self tests
  - Calibration stats
  - Random Load/Unload
  - Random (Slots Only)
  - Random (Drive Focus)
  - Sequential bins
  - Sequential drives
- 2 Use the up and down arrows to select the system test and press **Enter** to execute.
  - 3 When you are finished executing system-level tests, press **Exit** to return to the **Diags** screen.

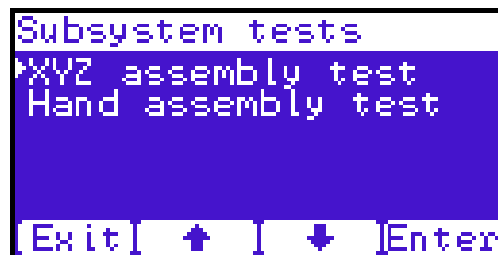
### Subsystem Tests

To execute a subsystem test:

- 1 From the **Diags** screen, use the up and down arrows to highlight **Subsystem Tests** and press **Enter**.

The **Subsystem Tests** screen displays (see [figure 56](#)):

Figure 56 Subsystem Tests  
Screen



The **Subsystem Tests** screen provides the following diagnostic tests:

- XYZ assembly test
- Hand assembly test



- 2 Use the up and down arrows to select the subsystem test and press **Enter** to execute.
- 3 When you are finished executing subsystem tests, press **Exit** to return to the **Diags** screen.

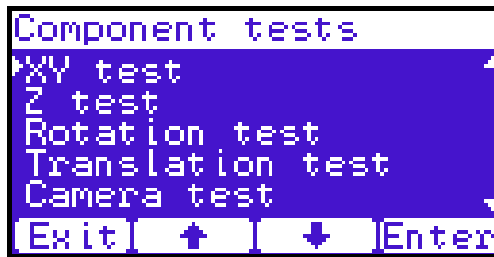
### Component Tests

To execute a component test:

- 1 From the **Diags** screen, use the up and down arrows to highlight **Component Tests** and press **Enter**.

The **Component Tests** screen displays (see [figure 57](#)):

Figure 57 Component Tests Screen



The **Component** test screen provides the following diagnostic tests:

- XY test
  - Y tests
  - Rotation stats
  - Translation test
  - Camera test
  - Temperature test
  - Home position
- 2 Use the up and down arrows to select the component test and press **Enter** to execute.
  - 3 When you are finished executing component tests, press **Exit** to return to the **Diags** screen.

## Load Port Configuration

Load ports are used to import or export tape cartridges from the library. When configured as a load port, your backup application will automatically use these bins when exporting or importing tape cartridges. The bottom left and right magazines in each library can be configured to provide the following load port elements:

- Single column load port (5 slots SDLT/6 slots LTO)
- Magazine load port (15 slots SDLT/18 Slots LTO)

**Tech Tip:** Deciding between a single column and an entire magazines as a load port depends on the amount of tape cartridges you typically import/export from the library. If you generally import or export small numbers of tape cartridges to and from the library, a single column should be sufficient. If you import or export large numbers of tape cartridges, an entire magazine as a load port would be beneficial.

Each of the load ports are configured independently so that one load port can be configured as a column and the other load port can be configured as a column or as a magazine.

When set for a single column load port, the magazine is physically restricted to allow access to the first column in the magazine only.

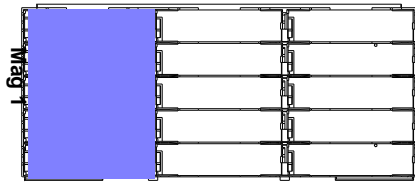
When set for a 15-slot load port, the entire magazine can be removed (the same for a 18-slot LTO magazine).

The load port option is set using the operator control panel **Setup** menu. The settings are listed in [table 17](#) and illustrated in [figure 58](#).

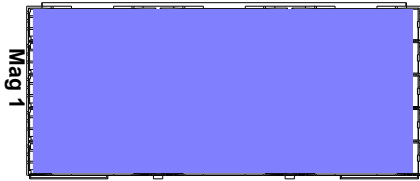
Table 17 Import/Export Option Settings

Setting	Manual Access	SCSI Element
None	None	Storage element
Single column	Single column	Import/Export element
Magazine	Entire magazine	Import/Export element

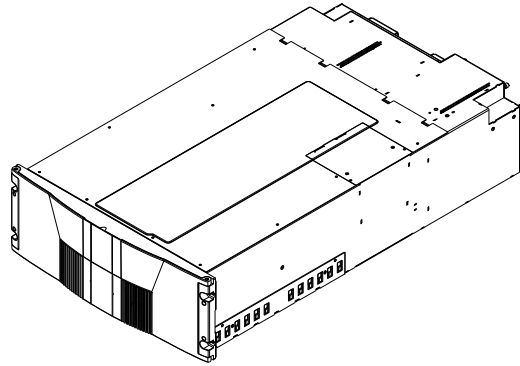
Figure 58 Load Port Settings



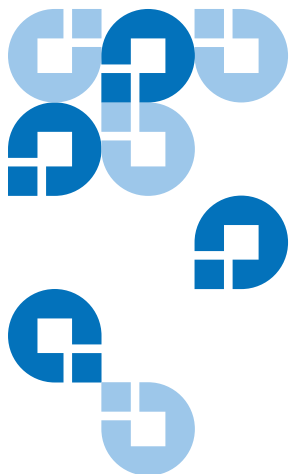
Single column load port



Full magazine load port



PX502 shown



## Chapter 3

# Quantum PX500 Series Remote Management

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The Quantum PX500 Series library utilizes a web-based interface which allows you to configure and manage the library from a remote workstation on the same network. The Quantum PX500 Series library is managed through the following web pages (accessible using Internet browser software installed on the host computer):

- [Status](#) allows you to view the following: hardware status, event logs, and statistics
- [Operations](#) allows you to perform cabinet operations remotely such as cartridge movement and inventory requests and drive operations
- [Setup](#) allows you to setup cabinet identification, user information, SCSI IDs, network information, events, date and time information, partitioning, and secure tape information.
- [Utilities](#) allows the user to run cabinet utilities remotely.
- [Reference](#) links to related sites.
- [Logout](#) allows the user to log out of the library remote management pages.

## Quantum PX500 Series Web Pages

The internet browser software is not supplied with the Quantum PX500 Series library; you must obtain and install it independently. The Quantum PX500 Series library supports the following internet browsers:

- Microsoft Internet Explorer 6.1 or later  
You can download this software from <http://www.microsoft.com>.

**Note:** To optimize performance, all browsers should have both cookies and pop-ups enabled. This allows the refresh activities of the remote management web pages to work appropriately. Java 1.4.2 or above available from <http://www.java.com> should also be installed to support applets that automatically refresh pages and display pop-ups for warnings and critical events.

- Mozilla Suite 1.7 on Solaris 10  
You can download this software from <http://www.mozilla.org>
- Firefox 1.0.6 on Windows  
You can download this software from <http://www.mozilla.org>
- Java Plug-in 1.4.2 or later  
You can download this software from <http://www.java.com>

### Quantum PX500 Series Web Page Menu Items

The following figures depict the menu items available from the Quantum PX500 Series Web Pages:

- [Figure 59](#) provides the default menus for the PX500 Series web pages
- [Figure 60](#) provides an additional menu for tape security features available with the DLT-S4 tape drives. When this feature is enabled, the menu displays as part of the **Setup** page.

Figure 59 Quantum PX500 Series Web Page Menu Items

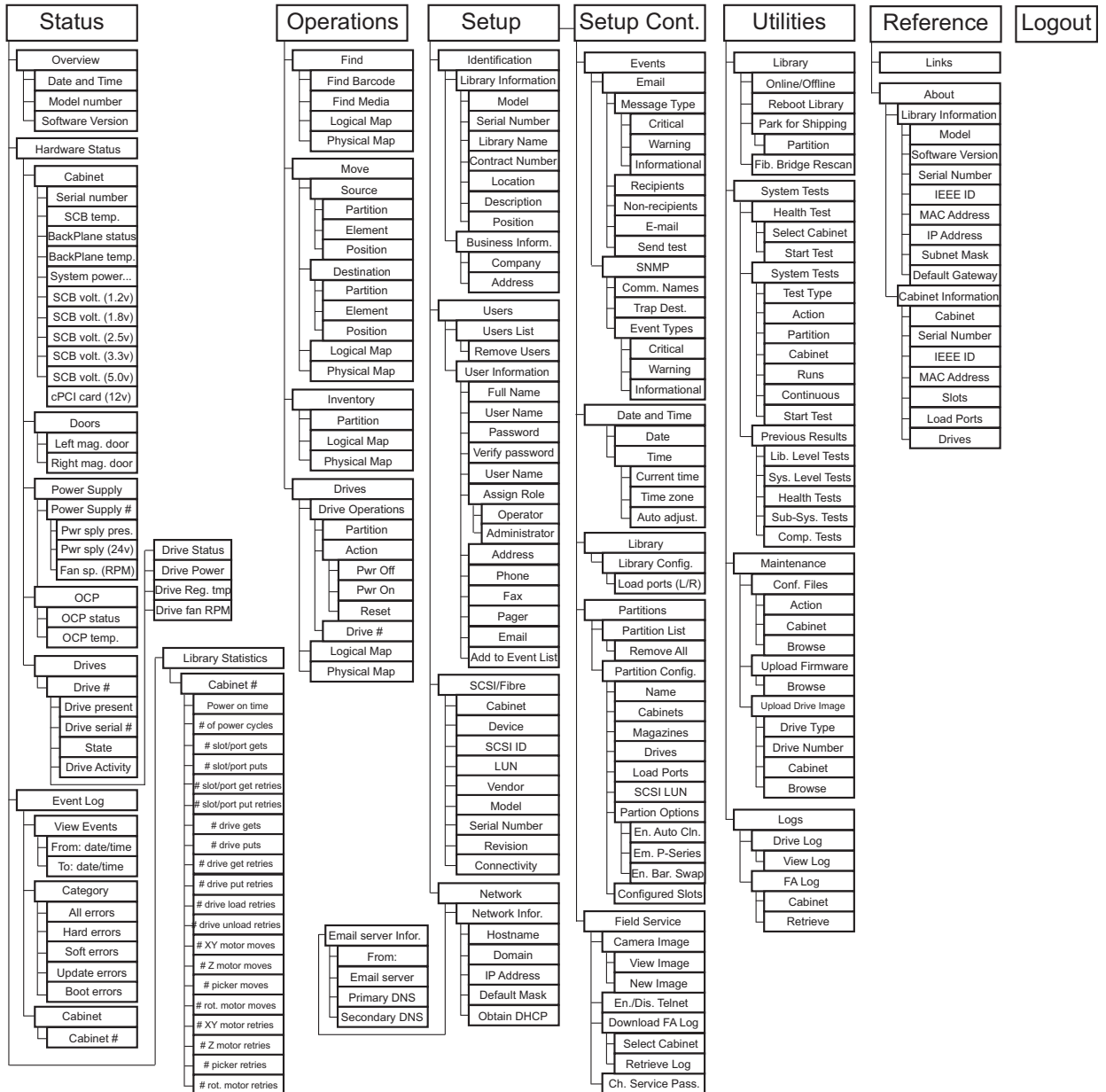
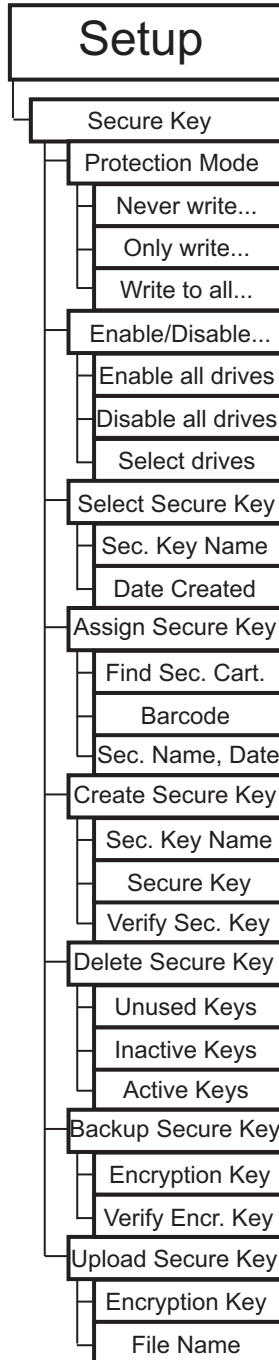


Figure 60 Quantum Tape  
Security Menus



## Accessing PX500 Series Web Pages

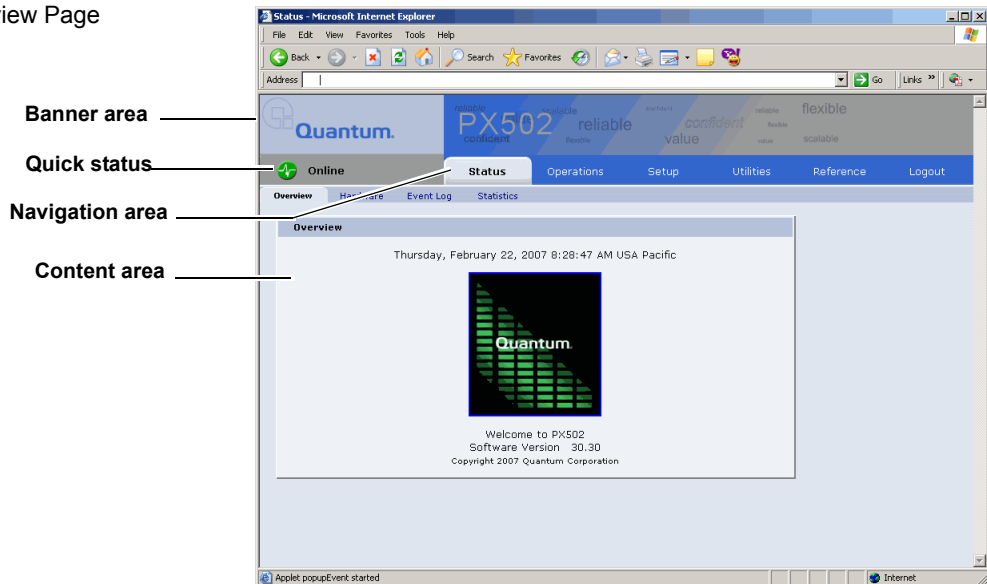
To access the Quantum PX500 Series web pages:

- 1 On the host computer, open the internet browser software.
- 2 In the **Address** field, type `http://IPAddress/` where IP address is the IP address for the Quantum PX500 Series. (see [“Setup”](#) on page 106).
- 3 Enter the username and password and click **OK**.

**Note:** The default username and password is **admin**.

The **Overview** page displays (see [figure 61](#)):

Figure 61 Overview Page



## Using the Quantum PX500 Series Web Pages

The first page that displays when you access the Quantum PX500 Series web pages is the Quantum PX500 Series **Overview** page (see [figure 61](#)). This page includes information on the Quantum PX500 Series such as library name, date and time, and includes a dynamic graphic which changes colors depending on the library health.



The **Overview** page is divided into five distinct sections:

- Banner
- Quick status
- Navigation area
- Content area

The banner frame displays the corporate logo and product name. The contents frame displays a list of the Quantum PX500 Series web pages. To view a page, click its corresponding link. The management frame displays the page you selected.

To return to a previous web page, click the browser's **Back** button.

## Quick Status

The **Quick Status** icon provides the current health status for the library. Refer to the following tables ([table 18](#) and [table 19](#)) for quick status library health conditions.

Table 18 Quick Status Library Health Conditions



Quick Status Icon	Library Health	Description
 Online	Library health: <b>OK</b> .	The library health is <b>OK</b> .
 Online	Library health: <b>Critical</b>	The library health is in a <b>Critical</b> state (needs attention)

Table 19 Quick Status Health Messages

Quick Status Messages	Description
<b>Online and Offline</b>	These messages indicate the current availability status of the library.
<b>Init Error</b>	The library has failed to initialize. Review the hardware status page and contact Quantum Customer Support if necessary.

<b>Quick Status Messages</b>	<b>Description</b>
<b>Stopped</b>	The gripper has stopped. Check the error log and contact Quantum Customer Support if necessary.
<b>Door Open</b>	A library door is open.
<b>Tape Cleaning</b>	A tape drive is being cleaned.
<b>Moving</b>	A tape cartridge is being moved.
<b>Code Update</b>	The library is in the process of upgrading the system code. Wait until the process is complete
<b>Initializing</b>	The library is in the process of coming online. Wait until the library becomes online.
<b>Power Down</b>	The library is powering down. Wait for the unit to shutdown.
<b>Communication Down</b>	The library is in the process of shutting down. Library communication will resume when the library powers on.
<b>Over Temp</b>	The library has exceeded the maximum temperature threshold. Review the hardware status page and contact Quantum Customer Support if necessary.
<b>Diagnostic</b>	The library is executing a diagnostic test. Wait for the test to complete.

## Status

The **Status** page displays the general status or health of the library as well as specific hardware status. The page also provides access to event logs as well as library statistics.

The **Status** page is divided into the following sections:

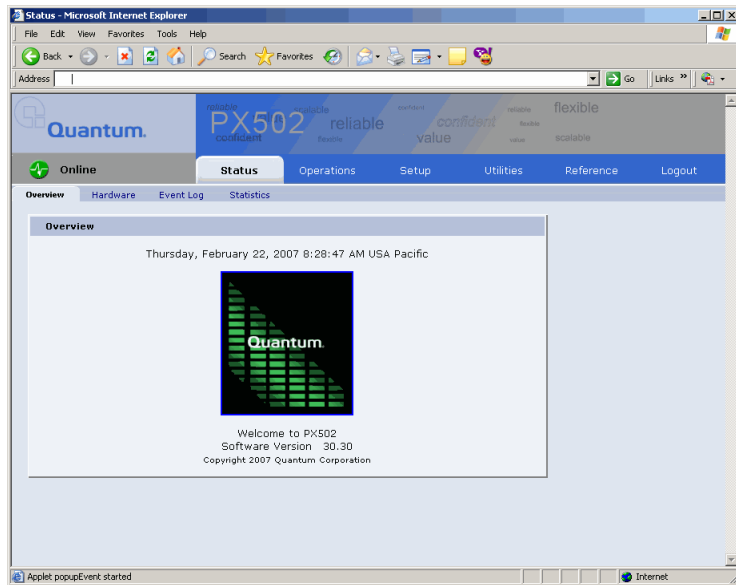
- [Overview Page](#)
- [Hardware Status Page](#)
- [Event Log Page](#)
- [Statistics Page](#)

### Overview Page

To access the **Overview** page, from any page, click **Status** from the navigation bar.

The management frame displays the **Status** page (see [figure 62](#)).

Figure 62 Status Page



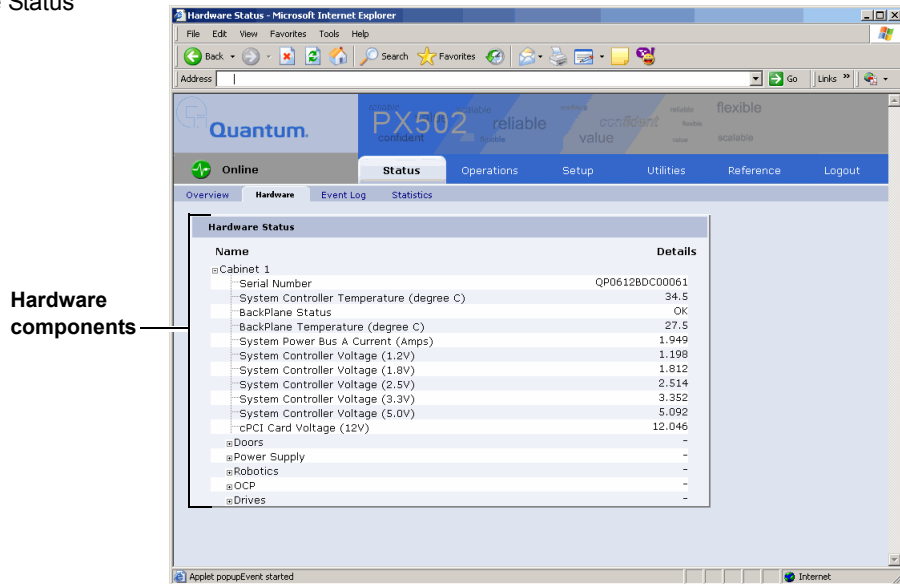
## Hardware Status Page

The **Hardware** status page displays the library component status within the library.

To access the **Hardware** page, from the **Status** page, click on the **Hardware** tab at the top of the page.

The **Hardware Status** page displays (see [figure 63](#)):

Figure 63 Hardware Status Page



Library components within the library are displayed in a tree-like fashion. A red background indicates critical or failed condition. Related values or error messages are listed under details.

To view the status of a library component

- 1 Click on a plus sign to expand a branch and display the status of related subcomponents. Click on a minus sign to collapse a branch. Click **Expand All/Collapse All** to expand or collapse all branches.

Some components, such as drives, are displayed as a link. Clicking on the link will open a detail window displaying all data related to the component.

## Event Log Page

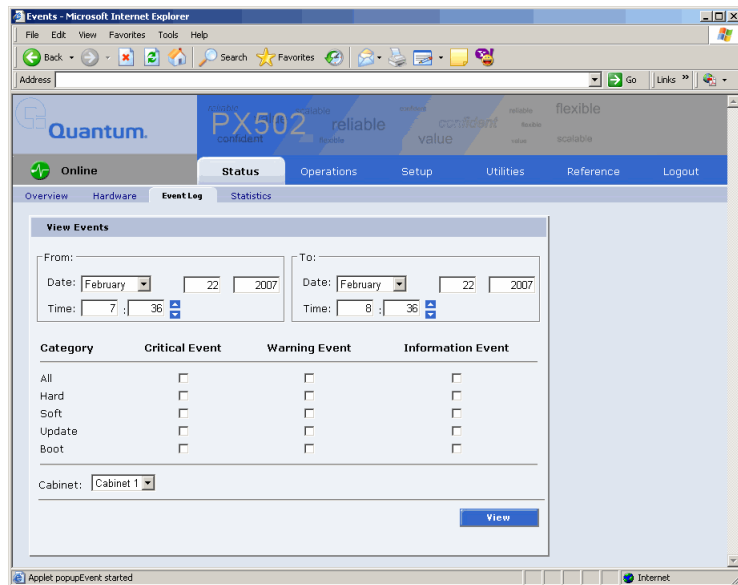
The **Event Log** page allows the user to view events that occur on the library. These events are divided into the following categories:

- All - views all events in all categories
- Hard - views only hardware related events
- Soft - views only software related events
- Update - views only events related to library update functions
- Boot - views only events related to library boot sequence

To access the **Event Log** page, from the **Status** page, click on the **Event Log** tab at the top of the page.

The **Event Log** page displays (see [figure 64](#)):

Figure 64 Event Log Page



To view an **Event Log**:

- 1 In the **Event Log** page, change the **From** and **To** areas to reflect the time range of the event log you wish to view. Click the up and down arrows to change the hour and/or minute values by increments of one. Double-clicking will increment or decrement the value by 5. You may also type in a valid hour (0 - 24) or minute (0 - 59).

**Note:** The default date/time range is one hour prior to the current time and day.

- 2 Select desired categories and priority levels (critical, warning, or informational) for the event list.
- 3 Click **View** to display the list.

**Note:** Search time will vary depending on the time range entered.

A smaller window displays the information matching the range, category, and priority specified.

---

## Statistics Page

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The **Statistics** page allows the user to view library statistics for the entire library or certain components within the library.

The following table shows the statistics available from the **Statistics** page:

Table 20 Statistics Information

<b>Cabinet or Component</b>	<b>Statistical Information</b>
Cabinet (library)	Time since last power-on (seconds)
	Time processing robot commands (seconds)
	Estimated number of power cycles
	Attempted slot/port picks
	Attempted slot/port places
	Attempted drive picks
	Attempted drive places
	Number of individual horizontal moves
	Number of individual vertical moves
	Number of individual extension moves
	Number of individual gripper moves
	Number of individual depth moves
	Number of individual rotary moves
	Number of horizontal retries
Number of vertical retries	

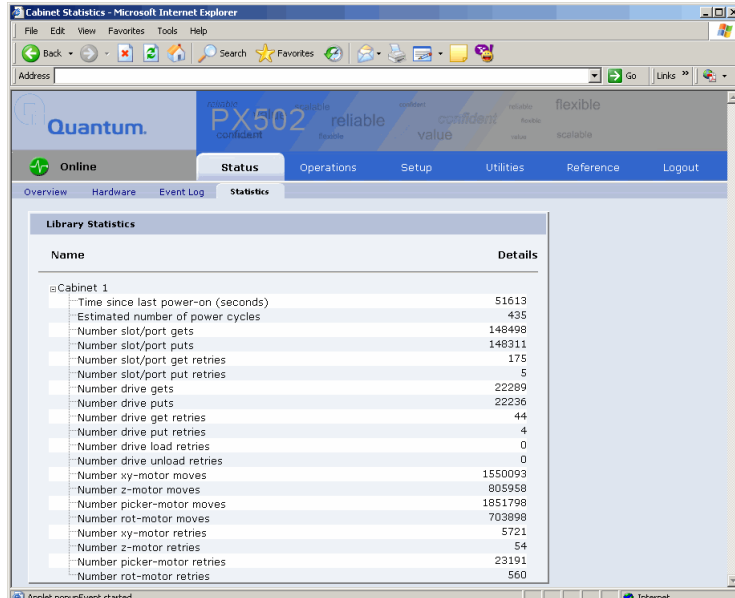
Cabinet or Component	Statistical Information
	Number of extension retries
	Number of gripper retries
	Number of depth retries
	Number of rotary retries
	Number of drive place retries
	Number of drive pick retries
	Number of partially gripped cartridge retries
	Number of drive load retries
	Number of barcode scan retries
	Number of slot/port pick retries
	Number of slot/port place retries

To access the **Statistics** page, from the **Status** page, click on the **Statistics** tab at the top of the page.

The **Statistics** page displays (see [figure 65](#)):



Figure 65 Statistics Page



**Note:** Statistics for individual elements (a specific drive, slot, or port) are included in the element detail window and can be viewed by clicking on a drive, slot, or port link from zoom windows accessed via the **Operations** pages. The zoom windows are opened by clicking on the panel or cluster name from physical or logical maps.

## Operations

The **Operations** page is divided into the following sections:

- [Find Page](#)
- [Move Page](#)
- [Inventory Page](#)
- [Drives Page](#)

---

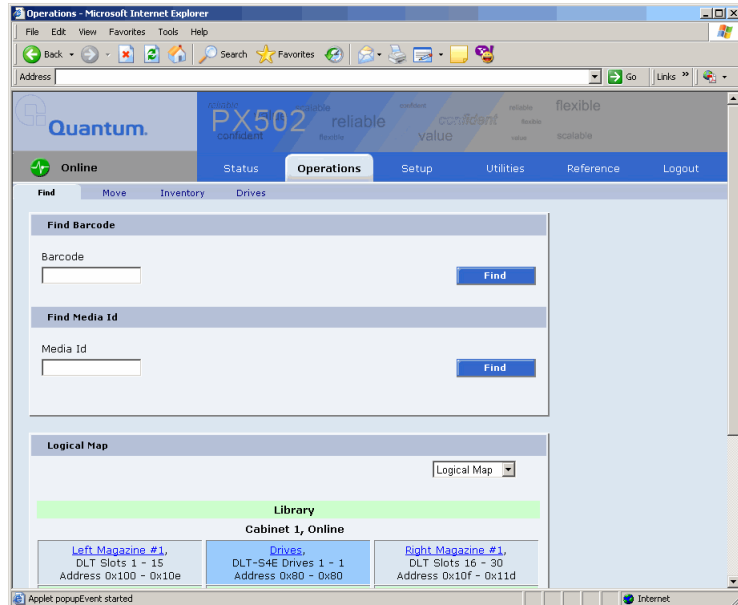
## Accessing the Operations Page

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To access the **Operations** page, click **Operations** from the contents frame. The management frame displays the **Operations** page (see [figure 62](#)).

---

Figure 66 Operations Page



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## Find Page

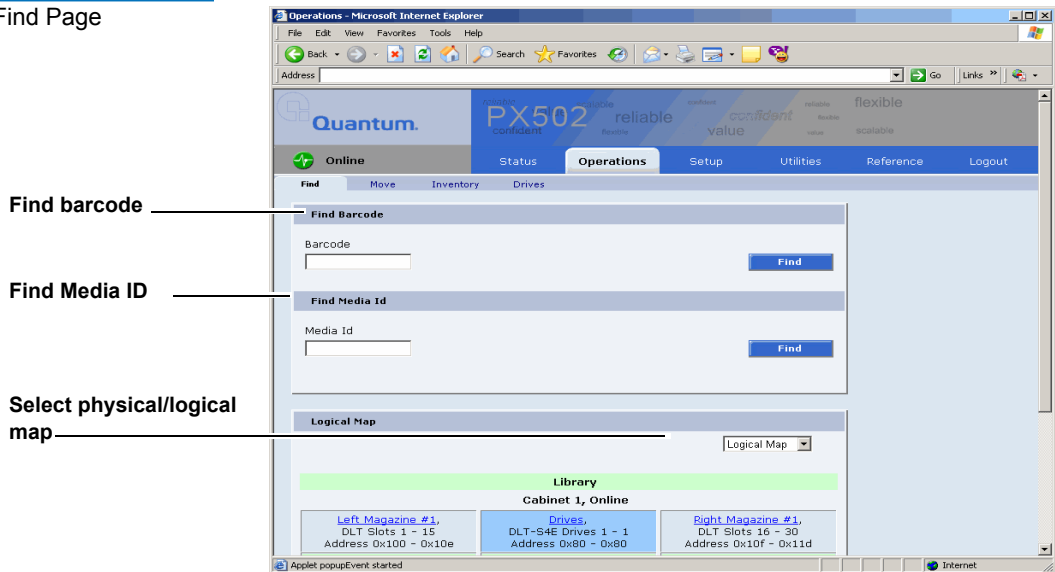
---

The **Find** page allows the user to find and locate specific barcodes within the library as well as view the library contents (slots, ports, drives, gripper, or address).

To access the **Find** page, from the **Operations** page, click on the **Find** tab at the top of the page.

The **Find** page displays (see [figure 67](#)):

Figure 67 Find Page



The **Find** page is divided into the following sections:

- [Find Barcode](#)
- [Find Media ID](#)
- [Select Map](#)

### Find Barcode

The find barcode section allows the user to find a specific barcode (or partial barcode) within the library and view its location.

To find a barcode or partial barcode:

- 1 Enter a barcode, or partial barcode with wildcards (\*,?) in the barcode field.

**Note:** Leaving the barcode field empty will result in listing all barcode labels within the library.

- 2 Click **Find**.

A separate window displays the barcode(s) sharing the barcode string entered in the barcode field. Click the individual barcode label to display the corresponding cartridge detail page.

### Find Media ID

The show contents section allows the user to locate a specific media ID within the library (slots, ports, drives, gripper, or address)

To find a media ID:

- 1 Enter a media ID, or partial ID with wildcards (\*, ?) in the Media ID field.

**Note:** Leaving the media ID field empty will result in listing all barcode labels within the library.

- 2 Click **Find**.

A separate window displays the media ID(s) sharing the string entered in the media ID field. Click the individual barcode label to display the corresponding cartridge detail page.

### Select Map

The select map section allows the user to view the library in either a physical or logical view. To toggle between physical and logical map, click the **Physical/Logical Map** button in the map section.

**Note:** The **Physical/Logical Map** information is displayed at the bottom of each **Operations** page.

**Physical Map:** A physical view displays a high level physical representation of the library. Slots, magazines, drives, and fixed slots are displayed as a panel located on either the left, rear, or right wall of the library. Clicking on the panel name opens a zoom view of the panel (i.e. similar to pulling out a loadport or drawer) displaying all elements (slots, ports, or drives) in a spreadsheet format.

**Note:** The physical map may show gaps in the element numbering depending on the load port configuration.

**Logical Map:** A logical map displays slots, magazines, drives, and fixed slots. Clicking on the panel name opens a zoom view of the panel (i.e. similar to pulling out a loadport or drawer) displaying all elements (slots, ports, or drives) in a spreadsheet format. From the zoom view, clicking on an element opens a detail window.

**Note:** Under the **Logical Map** view, an option to print the view to a local printer is available by clicking on the **Print View** link located in the upper left-hand corner of the **Logical Map** section.

## Move Page

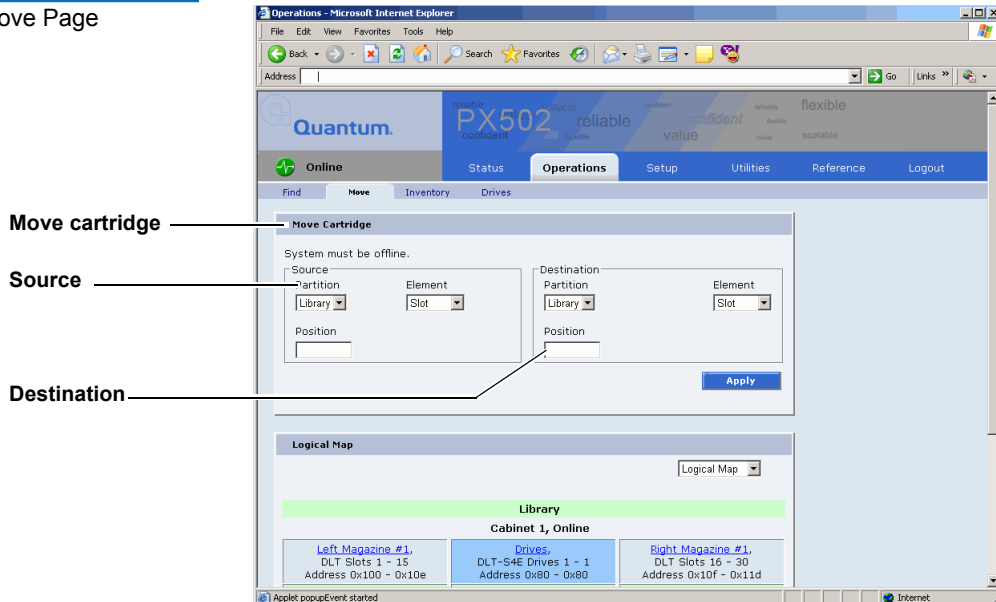
The **Move** page allows the user to move a single cartridge from a source (slot, port, drive, or address) to a destination (slot, port, drive, or address).

**Note:** The library must be off-line to move a cartridge.

To access the **Move** page, from the **Operations** page, click on the **Move** tab at the top of the page.

The **Move** page displays (see [figure 68](#)):

Figure 68 Move Page



To move a cartridge:

- 1 Select a cabinet, source element (slot, drive, address, or hand), and enter a starting position and count. If the count field is left empty, only the starting cartridge is moved.

**Note:** The hand is the robotic gripper used to move cartridges in the library. If the library is in a stacked environment with other PX500 Series libraries, the pass-thru slot is available as a source element.

- 2 Select a destination cabinet, element, and position. If more than one cartridge is moved, the position entered in as a destination is the first one filled, consecutive elements must be empty.

---

## Inventory Page

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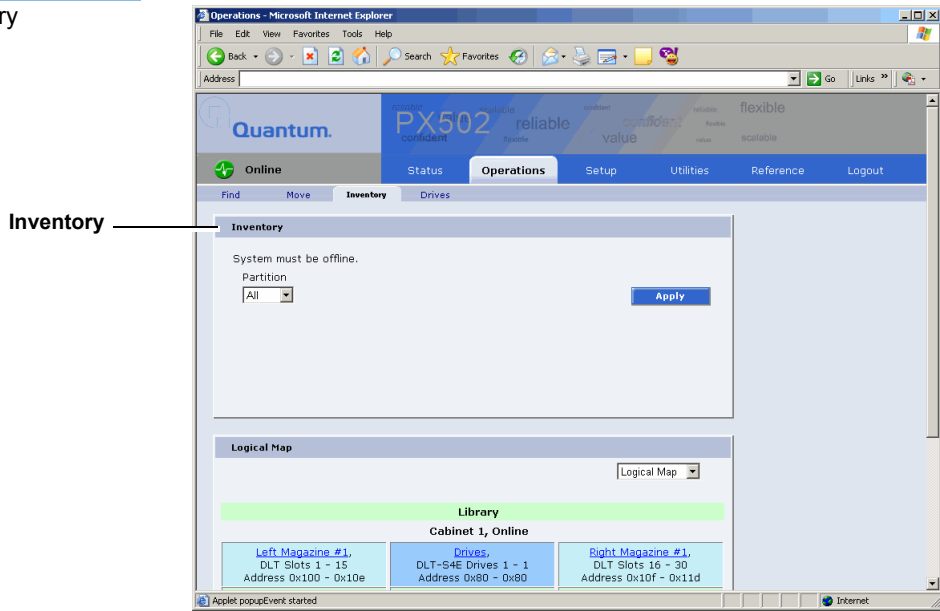
The **Inventory** page allows the user to perform an inventory on all elements within the library or specific element ranges.

**Note:** The library must be off-line to perform an inventory.

To access the **Inventory** page, from the **Operations** page, click on the **Inventory** tab at the top of the page.

The **Inventory** page displays (see [figure 69](#)):

Figure 69 Inventory Page



To perform an inventory:

- 1 Select the cabinet or library to inventory.
- 2 Click **Apply** to perform the inventory.

The progress of the inventory displays in a separate window.

## Drives Page

The **Drives** page allows the user to perform the following actions on the tape drives within the library:

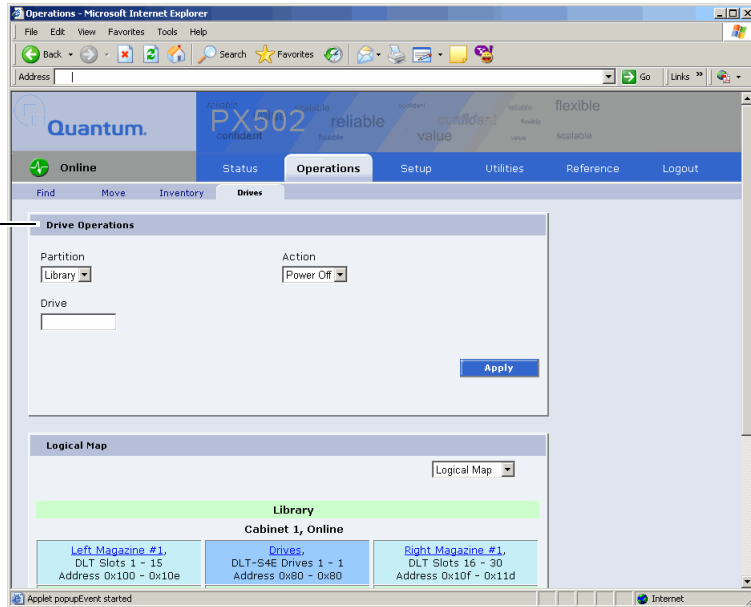
- Reset - re initializes the tape drive
- Power off - shuts down the tape drive
- Power on - powers on the tape drive

To access the **Drives** page, from the **Operations** page, click on the **Drives** tab at the top of the page.

The **Drives** page displays (see [figure 69](#)):

Figure 70 Drives Page

Drive operations



To perform an action on a tape drive(s)

- 1 Select a cabinet and enter a tape drive number
- 2 Select the action to perform (power off, power on, or reset).

**Caution:** Ensure that the tape drive does not contain a tape cartridge prior to powering down the tape drive.

- 3 Click **Apply** to perform the action.

The drive actions are performed.



# Setup

The **Setup** page is divided into the following sections:

- [Identification](#)
- [Users](#)
- [Key Users](#)
- [SCSI/Fibre](#)
- [FC/iSCSI Bridge](#) - Only if a Fibre Channel or iSCSI bridge is present
- [Network](#)
- [Events](#)
- [Date & Time](#)
- [Library](#)
- [Partitions](#)
- [Field Service](#)
- [Secure Key](#)

**Note:** The [Secure Key](#) tab is only available under the **Setup** page when the secure key administrator (**skadmin**) is logged onto the system **AND** a secure key capable tape drive (DLT-S4) is installed in the library.

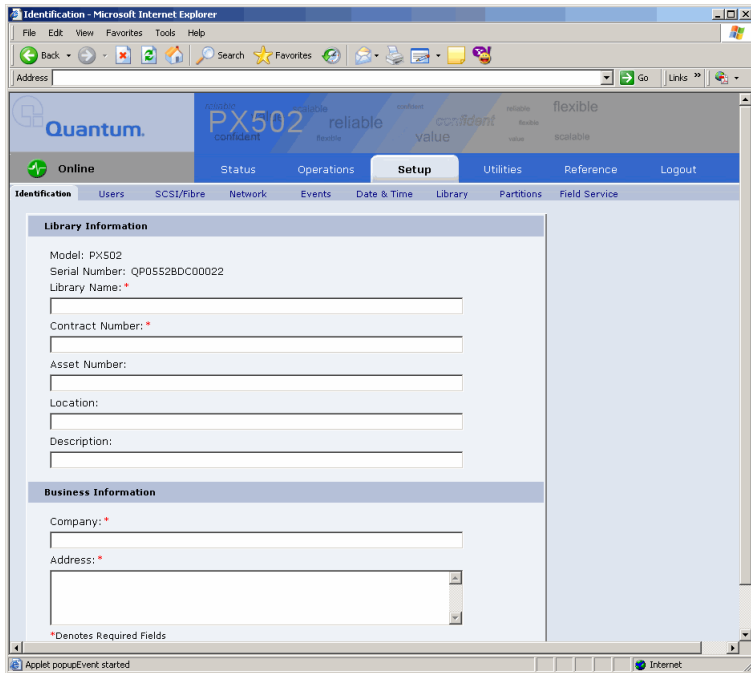
- [Secure Key Best Practices and Tape Migration](#)

## Accessing the Setup Page

To access the **Setup** page, click **Setup** from the contents frame.

The management frame displays the **Setup** page (see [figure 62](#)).

Figure 71 Setup Page



## Identification

The identification information is used to identify the library to assist customer support when servicing the library.

- 1 To access the **Identification** page, from the **Setup** page, click on the **Identification** tab at the top of the page.

The **Identification** page displays (see [figure 71](#)).

- 2 Edit the identification information as desired (see [table 24](#) for a description of the fields).
- 3 Click **Save** when complete.

Table 21 Identification Information

Field	Description
<b>Model</b>	Display only. Not entered by user
<b>Serial Number</b>	Display only. Not entered by user
<b>Library Name*</b>	Enter a name to identify this specific library

Field	Description
<b>Contract Number*</b>	Enter the contract number for the library. This is used to identify the library to customer support.
<b>Asset Number</b>	Customer internal tracking number.
<b>Location</b>	Enter the location of the library. This helps to identify the library when remotely controlling multiple machines.
<b>Description</b>	Enter a short description of the library.
<b>Company*</b>	Enter the company name where the library is located
<b>Address*</b>	Enter the company address where the library is located
*	Indicates a required field.

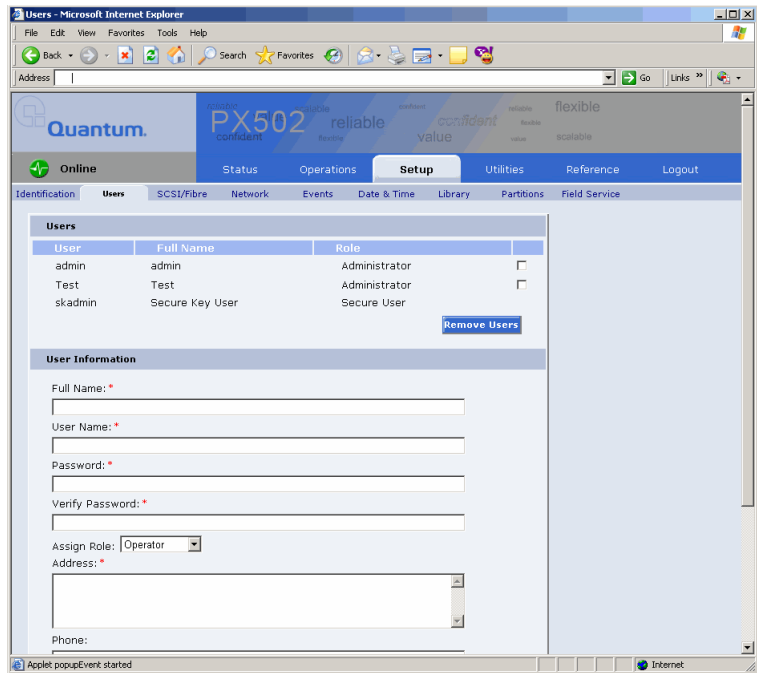
## Users

This section allows users to be added to the library configuration. The user access is also controlled from this section as well as email notification.

- 1 To access the **Users** page, from the **Setup** page, click on the **Users** tab at the top of the page.

The **Users** page displays (see [figure 72](#)).

Figure 72 Users Page



- 2 Edit the user information as desired (see [table 22](#) for a description of the fields).

**Note:** The username and password are limited to 7 characters.

- 3 Click **Apply** when complete.
- 4 To remove a user, select the user check box and click **Remove User**.

Table 22 User Information

Field	Description
<b>Full Name*</b>	Enter the full name of the user
<b>User Name*</b>	Enter a user name. <b>The user name can be no more than seven characters.</b>
<b>Password/Verify Password*</b>	Enter a password. <b>The password can be no more than seven characters.</b>

Field	Description
<b>Assign Role</b>	Select either <b>Administrator</b> or <b>Operator</b> for user privileges. An operator only has access to library status information. An administrator has access to all areas of the remote management pages.
<b>Address*</b>	Enter an address for the user's location
<b>Phone</b>	Enter the users phone number
<b>Fax</b>	Enter the users fax number
<b>Pager</b>	Enter the users pager number
<b>E-mail*</b>	Enter the users email address
<b>Add to Events E-mail List</b>	Adds this user to the email events list.
*	Indicates a required field.

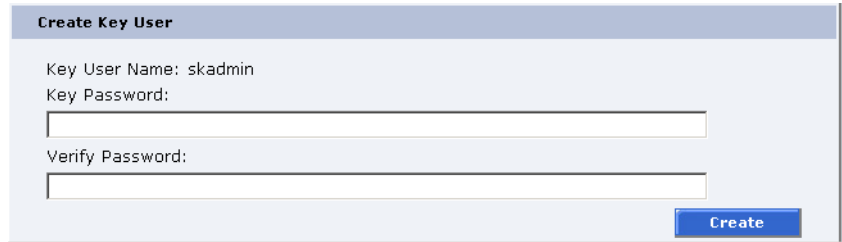
## Key Users

The **Key User** is the only user that has the ability to create, modify, and delete a **Secure Key** for the library. The **Key User** also has the ability to enable and disable **Secure Capable Drives** for reading and writing data to and from tapes using the **Secure Keys**.

### Creating a Key User

When a user is created with administrator privileges (other than the default admin user), the **Create Key User** section appears at the bottom of the **Users** page (see [figure 73](#)).

Figure 73 Create Key User



To create a **Key User**:

**Note:** Only users with administrator privileges (other than the default administrator) can create a secure user.

There is only one **Key User** and the username is always **skadmin**.

- 1 Enter a secure password.

**Note:** **Key User Passwords** must be at least four characters long and include at least one non-alphanumeric character. Spaces, double quotes (“), and blank passwords are rejected. **Key User Password** and **Verify Password** must match.

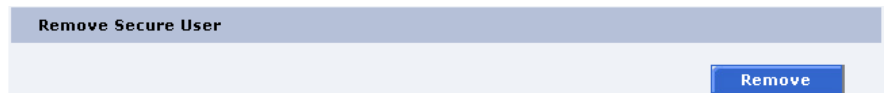
- 2 Verify the secure password by entering the password a second time in the **Verify Password** box.
- 3 Click **Create** to create the **Key User**.

The **Key User** is created.

### Remove Key User

Once the **Key User** is added, the **Remove Secure User** section displays at the bottom of the **Users** page (see [figure 74](#)).

Figure 74 Remove Secure User



To remove the **Key User**, click **Remove**.

The **Key User** is removed.

### Updating the Key User Password

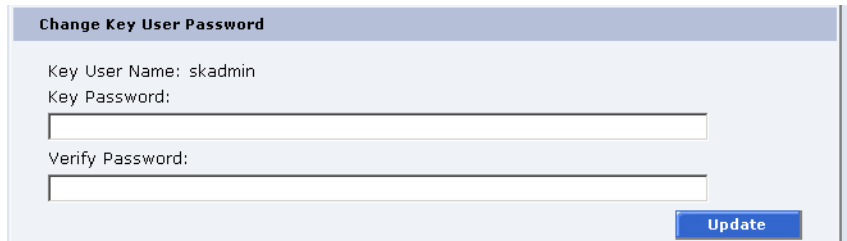
To update the secure key password:

**Note:** Only the **Key User** (logged in as **skadmin**) can change the key user password.

- 1 Log on to the library as the **Key User** (username: **skadmin**).
- 2 Enter the current **Key User Password**.
- 3 Click the **Users** tab.

The **Change Key User Password** section displays at the bottom of the **Users** page (see [figure 75](#)).

Figure 75 Change Key User Password



The screenshot shows a web form titled "Change Key User Password". The form contains the following elements:

- Title: Change Key User Password
- Text: Key User Name: skadmin
- Text: Key Password: [input field]
- Text: Verify Password: [input field]
- Button: Update

- 4 Enter a new **Key User Password**.

**Note:** **Key User Passwords** must be alphanumeric strings of at least one character. A blank secure password will be rejected. **Key User Password** and **Verify Password** must match.

- 5 Verify the **Key User Password** by entering the password a second time in the **Verify Password** box.
- 6 Click **Update** to update the **Key User Password**.

The **Key User Password** is updated.

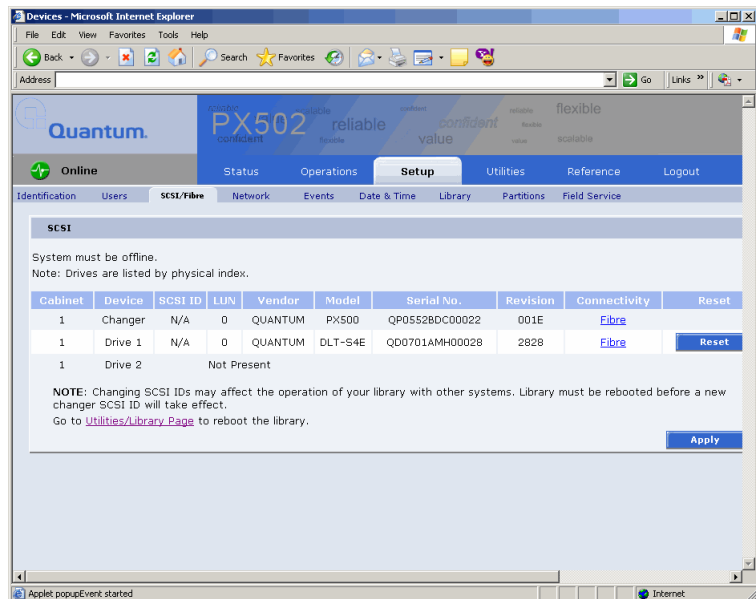
## SCSI/Fibre

This section allows the user to set the SCSI IDs for the changer (library) and every tape drive within the library and also configure any Fibre Channel tape drives.

- 1 To access the **SCSI/Fibre** page, from the **Setup** page, click on the **SCSI/Fibre** tab at the top of the page.

The **SCSI/Fibre** page displays (see [figure 76](#)).

Figure 76 SCSI Page



- 2 To change a SCSI ID, enter the ID number in the field next to the device and click **Apply**.

To change a drive SCSI ID, the cabinet must be off-line. To change a cabinet (changer) SCSI ID, the library must be rebooted before the new ID takes effect.

- 3 Click the device (tape drives) to view the drive details.

## Native Fibre Channel Tape Drives

To configure the Native Fibre channel topology, speed, and loop ID:

- 1 Click on the **Fibre** link under the **Connectivity** type.



The media changer or tape drive configuration screen displays. Refer to [table 23](#) for configuration options.

Table 23 Native Fibre Channel Configuration Options

Configuration Option	Description
Configured Speed	Select 1 G, 2 G, or Auto negotiate to set the configured speed
Configured Topology	Select point-to-point, arbitrated loop, or Auto negotiate to set the configured topology.
Loop ID	Select the loop ID. The loop ID can only be set when the configured topology is set to arbitrated loop.

## FC/iSCSI Bridge

This section allows users manage the FC1202 Fibre Channel bridge(s) or TC2201 iSCSI bridges installed in the cabinet.

**Note:** The FC or iSCSI bridge information only displays when a Fibre Channel or iSCSI bridge is installed in the library.

- 1 To access the **FC/iSCSI Bridge** page, from the **Setup** page, click on the **FC/iSCSI Bridge** tab at the top of the page.

The **FC/iSCSI Bridge** page displays (see [figure 77](#)).

Figure 77 Fibre Channel/iSCSI Page



The FC/iSCSI bridge page displays:

- Cabinet number(s)
- Device number(s)
- IP address for the FC/iSCSI bridge
- Model of the FC/iSCSI bridge
- World wide name for the FC/iSCSI bridge
- Serial number for the FC/iSCSI bridge
- Current firmware revision on the FC/iSCSI bridge

2 Click **Rescan** to discover new FC/iSCSI bridges or updated firmware.

3 Click on the Fibre Channel/iSCSI bridge you want to manage.

The FC1202 or TC2201 web interface displays. For more information on the FC1202 Fibre Channel bridge and the web interface, see the *Quantum FC1202 User's Guide* (PN 81-81354) included on the Quantum PX500 Series documentation CD. For more information on the TC2201 iSCSI bridge and the web interface, see the *Quantum TC2201 User's Guide* (PN 81-81539) included on the Quantum PX500 Series documentation CD.

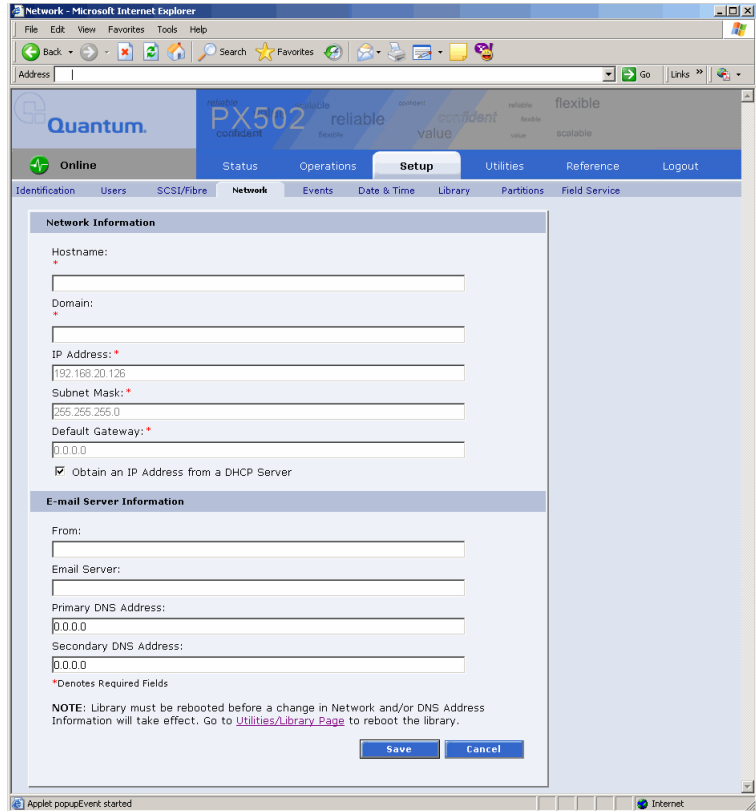
## Network

The network information section allows the user to enter network information so the library can be controlled remotely via an Ethernet network.

- 1 To access the **Network** page, from the **Setup** page, click on the **Network** tab at the top of the page.

The **Network** page displays (see [figure 78](#)).

Figure 78 Network Page



- 2 Edit the network information as desired (see [table 24](#) for a description of the fields).
- 3 Click **Save**.

The Quantum PX500 Series will not use the new network information until it has been rebooted (see "[Setup](#)" on page 106).

Table 24 Network Configuration Fields

Field	Description
<b>Hostname*</b>	View or set the hostname for the library (for example, the DNS name)
<b>Domain*</b>	View or set the domain name for the library
<b>IP Address*</b>	View or set the IP address for the library
<b>Subnet Mask*</b>	View or set the subnet mask for the library
<b>Default Gateway*</b>	View or set the default gateway for the library
<b>Obtain IP from DHCP Server</b>	If your network uses a DHCP server to assign device IP addresses dynamically, select this box
<b>Email Server</b>	View or set the email server information
<b>Primary DNS Address</b>	View or set the primary DNS address
<b>Secondary DNS Address</b>	View or set the secondary DNS address
*	Indicates a required field.

## Events

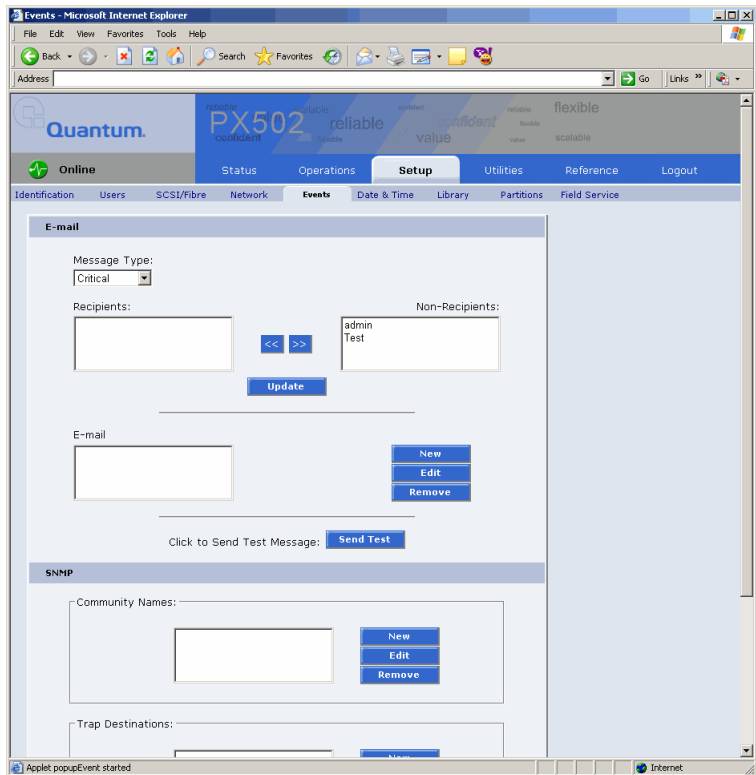
The **Events** page allows the user to designate what library events are emailed to users as well as setup SNMP traps.

**Note:** For a complete list of available library events, see [chapter 4](#) on page 150.

- 1 To access the **Events** page, from the **Setup** page, click on the **Events** tab at the top of the page.

The **Events** page displays (see [figure 79](#)).

Figure 79 Events Page



- 2 Edit the Email information as desired (see [table 25](#) for a description of the fields) and click **Update**.
- 3 After editing the Email information, click the **Send** button to test the notification system. If the test is not successful, verify the email server information and the administrative recipients list and try again.

The **Email** area details are shown in [table 25](#), [table 26](#), and [table 26](#).

Table 25 Email Notification

Field	Description
<b>Message Type:</b> <b>Critical</b>	When a hardware failure occurs on the Quantum PX500 Series system such as a transition to a degraded, limited access, or failed system state, an email is sent to everyone on the critical failure recipient list.

Field	Description
<b>Message Type: Warning</b>	When a warning state exists on the Quantum PX500 Series system such as an overtemp condition, an email is sent to everyone on the warning recipient list.
<b>Message Type: Informational</b>	When an informational event has occurred on the Quantum PX500 Series system such as starting up or shutting down the system, an email is sent to everyone on the operator access recipient list.
<b>New</b>	To add a new recipient to a specific list, type the email address of the new recipient in the field and click <b>Save</b> .
<b>Edit</b>	To edit a recipient, select the individual email address from the list and click <b>Edit</b> .
<b>Remove</b>	To remove an email notification type from the E-mail list, select the E-mail type and click <b>Remove</b> .

Table 26 Send Email Test

Field	Description
<b>Send Test</b>	To test the email notification system, click <b>Send Test</b> . An email is sent to the critical e-mail recipients list. If the test email is not successful, verify the email server information and the critical recipients list and try again.

### SNMP

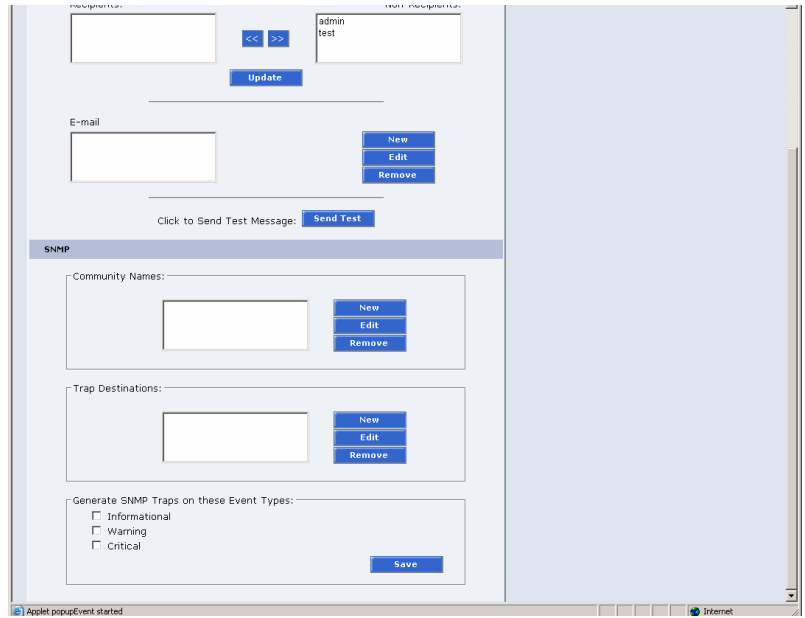
If the customer wishes to use the Quantum PX500 Series system with a network framework application such as HP OpenView, or CA Unicenter, the SNMP configuration must be defined. SNMP stands for Simple Network Management Protocol, a set of protocols for managing complex networks. SNMP works by sending messages, called protocol data units (PDUs), to different parts of a network. SNMP-compliant devices, called

agents, store data about themselves in Management Information Bases (MIBs) and return this data to the SNMP requesters.

- 1 Under **Community Names** (see [figure 80](#)), click **New** to enter the new community information:
  - a A unique name in the **Name** field, the field holds up to 60 characters. No blank spaces are allowed.
  - b IP address in the **IP Address** field, if the value in the Network Mask edit box ends in a zero, the value in the IP address edit box must also end in a zero
  - c Subnet mask in the **Network Mask** field.
  - d Access rights for the new community:
    - **Read Only** allows SNMP **read** operations:
    - **Read/Write** allows both SNMP **read** and **write** operations.
- 2 Click **Save**.

A **Results** page displays indicating the community has been added.
- 3 Click **New** in the Trap Destination area (see [figure 80](#)), to set the IP addresses that are to receive the traps generated by the Quantum PX500 Series, for example, 12.34.56.78.

Figure 80 SNMP Section of Event Page



4 Enable the trap selections to be reported (see [table 27](#)):

Table 27 SNMP Trap Selections

Field	Description
Informational	If selected, <b>Informational Traps</b> are enabled.
Warning	If selected, <b>Warning Traps</b> are enabled.
Critical	If selected, <b>Critical Traps</b> are enabled.

5 Click **Save**.

A **Results** page displays indicating the configuration has been changed.

## Date & Time

The date and time page allows the user to view and set the date and time on the library. This allows the library to time stamp any events that occur.

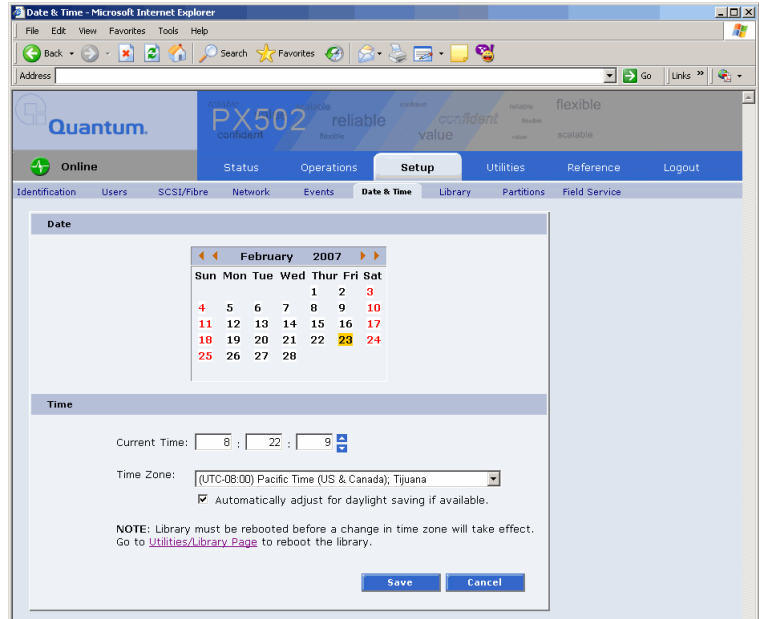
**Note:** The Quantum PX500 Series must be offline to adjust the time and date.



- 1 To access the **Date & Time** page, from the **Setup** page, click on the **Date & Time** tab at the top of the page.

The **Date & Time** page displays (see [figure 81](#)).

Figure 81 Date & Time Page



- 2 Select **Manual** to manually set the system date and time using the **Change** button for the system date and drop down boxes for the system time.
- 3 Click **Save** when complete.

The Quantum PX500 Series will not use the new date and time zone information until it has been rebooted.

## Library

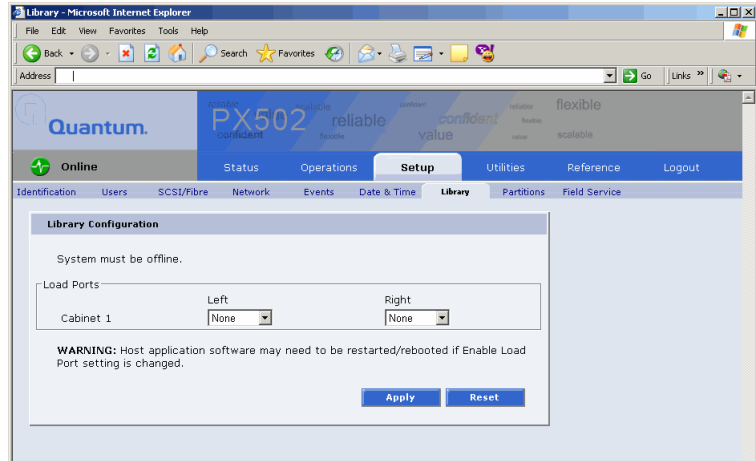
The library configuration section allows the user to configure automatic library settings.

**Note:** The library must be offline to change the library settings.

- 1 To access the **Library** page, from the **Setup** page, click on the **Library** tab at the top of the page.

The **Library** page displays (see [figure 82](#)).

Figure 82 Library Page



- 2 Edit the library settings as desired (see [table 28](#) for a description of the fields) and click **Apply**.

Table 28 Library Configuration

Field	Description
<b>Enable Left Load Port/Right Load Port</b>	When enabled, the Left Load Port/Right Load Port will act as load ports. When disabled, they will be use as regular slots.

- 3 Click **Reset** to return the library to its original settings.

---

## Partitions

---

Library partitioning provides the capability to divide the library's storage elements into separate partitions, usable by separate host computers on the same network. The maximum number of partitions per library is four partitions; however, the number of partitions is limited by the number of installed tape drives. For example: in a PX502 with two tape drives installed, only two partitions would be possible in this library.

### Partitioning Requirements

The requirements for library partitioning differ depending on the library interface. Additional equipment may be necessary to allow more than one partition.

- **Surrogate SCSI interface** - in a library with a surrogate SCSI interface, there is no additional equipment necessary for library partitioning.
- **Native Parallel SCSI interface** - in a library with a parallel SCSI interface, you must add a FC1202 Fibre Channel bridge and configure the Fibre Channel network to include the bridge(s) and host systems. If you do not have a FC1202 bridge installed, the library is limited to one partition.
- **Native Fibre Channel interface** - in a library with a native Fibre Channel interface, you must have a Fibre Channel switch available to connect to the library Fibre Channel SCB, Fibre Channel hosts, and native Fibre Channel tape drives. If you do not have a Fibre Channel switch available, the library is limited to one partition.

### PX500 Configurations that do NOT Support Partitioning

The following PX500 configurations do NOT support partitioning:

- **Native Parallel SCSI interface** - a parallel SCSI library without a FC1202 bridge cannot support partitioning.
- **iSCSI bridged Parallel SCSI** - a parallel library with a TC2201 iSCSI bridge cannot support partitioning.
- **Native Fibre Channel without a switch** - a Native Fibre Channel library that is not have a Fibre Channel switch cannot support partitioning.

### Accessing the Partitions Page

To access the **Partitions** page, click **Partitions** from the **Setup** page.

The management frame displays the **Partitions** page (see [figure 83](#)).

Figure 83 Partitions Page

The screenshot shows the Quantum PX500 management interface. The top navigation bar includes 'Online', 'Status', 'Operations', 'Setup', 'Utilities', 'Reference', and 'Logout'. The 'Setup' page has sub-tabs for 'Identification', 'Users', 'SCSI/Fibre', 'Network', 'Events', 'Date & Time', 'Library', 'Partitions', and 'Field Service'. The 'Partitions' section displays a table with columns for Partition, Magazines, Load Ports, Drives, and LUN. Below the table is a 'Partition Configuration' section with fields for Name, Available Elements, Cabinets, Magazines, Drives, Load Ports, and SCSI Logical Unit (LUN). A callout box highlights the 'Surrogate Drive' field, which is currently set to '1'. The 'Partition Options' section includes checkboxes for 'Enable Auto Clean', 'Emulate P-series', and 'Enable Barcode Swap'. A 'WARNING' message is displayed at the bottom of the configuration section.

The **Partitions** page contains a list of all user defined partitions and a section for either creating a partition or changing a partition's configuration and options.

Clicking on a partition name in the **Partition** list displays a detail window listing all details for the selected partition.

### Creating a Library Partition

To create a library partition:

**Note:** The library must be offline to create or edit a library partition.

- 1 Enter the partition information listed in [table 29](#) and click **New** to create the partition.

Table 29 Creating a Partition

Field	Description
<b>Partition Name</b>	Enter a unique name for the partition. Partition names must start with a letter (a-z or A-Z), cannot be longer than 10 characters, and cannot contain spaces or special characters. Library, Global, and Unassigned are reserved and cannot be used.
<b>Cabinets</b>	Select an available cabinet.
<b>Magazines</b>	Select one or more magazines from the unassigned magazine list and move it to the assigned magazine list. A partition <b>MUST</b> contain at least one magazine.
<b>Drives</b>	Select a drive or drives from the unassigned drives list and move it to the assigned drive list. A partition <b>MUST</b> contain at least one drive.
<b>SCSI Logical Unit (LUN) or Surrogate Drive</b>	<p><b>SCSI Logical Unit (LUN)</b> - Enter the SCSI logical unit number for this partition. Each partition must have a unique LUN designation. The default number is 0.</p> <p><b>Surrogate Drive</b> - Enter the surrogate tape drive number (logical drive number). Each partition must have an associated surrogate drive assigned.</p>
<b>Load Port</b>	Select a load port from the load port list if required for this partition. Load port elements can be shared across multiple partitions.

Field	Description
<b>Enable Autoclean</b>	Select this box to automatically clean the drives in the partition when needed.
<b>Emulate P-Series</b>	Select this box to return an P-Series inquiry string to the host connected to this partition. The partition will appear to the host as an P-Series tape library.
<b>Enable Barcode Swap</b>	Enables/ disables swapping media type prefix from the back of barcode to the beginning.
<b>Configured Slots</b>	The configured slots option allows you to designate the number of slots available and reported to the host.

### Editing a Library Partition

To edit a library partition:

**Note:** The library must be offline to create or edit a library partition.

- 1 Select the partition link under the **Partitions** section.  
The area below the **Partitions** section displays the selected partition settings.
- 2 Edit the partition information as desired (refer to [table 29](#)) and click **Apply** to save the changes.
- 3 Click **Clear** to clear the partition settings and return to [Creating a Library Partition](#).

## Deleting a Library Partition

There are two ways to delete partitions:

- 1 To delete a single library partition:
  - a Select the partition link under the **Partitions** section.

**Note:** When a partition is added, edited, or deleted the library must be rebooted for the changes to take effect.

- b Click **Remove** to delete the partition.  
The library partition is deleted.

- 2 To delete all of the library partitions:
  - a Click **Remove All**.  
All library partitions are deleted.

---

### Field Service

---

The **Field Service** page is limited to Quantum Field Service only.

---

## Secure Key

The **Secure Key** tab displays when a secure user has been added to the library and the secure user is logged in.

**Caution:** If the secure key information is lost, any tape cartridges that were secured with the lost key will be unavailable for reading or writing.

To access the **Secure Key** page, from the **Setup** page, click on the **Secure Key** tab at the top of the page.

The **Secure Key** page displays (see [figure 84](#)).

Figure 84 Secure Key Page

**Quantum PX500 reliable**

Online Status Operations **Setup** Utilities Reference

Identification Users SCSI/Fibre Network Events Date & Time Library **Secure Key**

---

**Protection Mode for Cartridges**

**System must be offline to Modify Secure Key Mode.**  
Current Library Secure Key Name:

When enabled for a drive, the Secure Key will always be used for reading data from a cartridge in the drive.

Protection Mode Options for Writing a Secure Key to a Cartridge:

- Never Write Secure Key to a Cartridge.
- Only Write Secure Key to Blank Cartridges.
- Write Secure Key to All Cartridges (Blank & Formatted with Data).

**NOTE:** If 'All Cartridges' is selected, drives enabled for Secure Keys will write an encrypted secure key to all cartridges placed in the drive, including blank cartridges and formatted cartridges containing data. The data on these cartridges will only be accessible via drives using the same secure key.

Apply Cancel

---

**Enable/Disable Secure Key for Drives**

**System must be offline to Enable/Disable Secure Key for Drives.**

- Enable Secure Key for All Drives.
- Disable Secure Key for All Drives.

Cabinet	Drive	Model	Type	Serial No.	Secure Key
31	0	DLT-54		CX0533AM000340	<input type="checkbox"/>

Update Cancel

---

**Select Secure Key for Library**

**System must be offline to Select Secure Key for Library.**  
Current Library Secure Key Name:

Secure Key Name, Date Created

Update Cancel

---

**Assign Secure Key to Cartridge**

Find Secured Cartridges

Assigns a selected Secure Key to one or more cartridges (i.e., a cartridge imported from another system). Separate barcodes by spaces or commas. Selecting 'Remove' removes any association between a cartridge and a Secure Key.

Barcode

Secure Key Name, Date Created

Update Cancel

---

**Create Secure Key Name/Secure Key Pair**

Secure Key Name

Secure Key

Verify Secure Key

New Cancel

---

**Delete Secure Key & Secure Key Name**

**WARNING:** Deleting a Secure key removes it from the system's memory. Any cartridges requiring this Secure Key will be unreadable on the system unless the Secure Key is restored. Backing up the Secure Key file is strongly recommended before deleting any Secure Keys.

Unused Keys:

Secure Key Name, Date Created

Inactive Keys:

Secure Key Name, Date Created

Active Keys:

Secure Key Name, Date Created

Delete Cancel

---

**Backup Secure Key File**

**NOTE:** The Encryption Key of the Library is required when restoring a Secure Key File to a different Library. Please keep the Secure Key File's associated Encryption Key in a secure, but accessible location.

Encryption Key:

Verify Encryption Key:

Save As...

---

**Upload Secure Key File**

Encryption Key (Required):

File Name:

Browse

Upload



The **Secure Key** page is divided into the following sections:

- [Protection Mode for Cartridges](#)
- [Enable/Disable Secure Key for Drives](#)
- [Select Secure Key for Library](#)
- [Assign Secure Key to Cartridge](#)
- [Create Secure Key Name/Secure Key Pair](#)
- [Delete Secure Key Name](#)
- [Backup Secure Key File](#)
- [Upload Secure Key File](#)

---

## Protection Mode for Cartridges

---

Figure 85 Protection Mode for Cartridges

Refer to [figure 85](#) for information on **Protection Mode for Cartridges**.

**Protection Mode for Cartridges**

**System must be offline to Modify Secure Key Mode.**  
Current Library Secure Key Name:

When enabled for a drive, the Secure Key will always be used for reading data from a cartridge in the drive.

Protection Mode Options for Writing a Secure Key to a Cartridge:

- Never Write Secure Key to a Cartridge.
- Only Write Secure Key to Blank Cartridges.
- Write Secure Key to All Cartridges (Blank & Formatted with Data).

**NOTE:** If 'All Cartridges' is selected, drives enabled for Secure Keys will write an encrypted secure key to all cartridges placed in the drive, including blank cartridges and formatted cartridges containing data. The data on these cartridges will only be accessible via drives using the same secure key.

Apply Cancel

The **Protection Mode for Cartridges** area defines when the secure key is used for a cartridge in a tape drive with a secure key enabled. In all modes, the secure key is used to read data from cartridges that have a pre-existing secure key. If the secure key on the cartridge does not match the current secure key on the library, the data on the cartridge can not be read.

Three write protection modes are available:

- **Never Write Secure Key to a Cartridge** - The secure key will never be written to a cartridge placed in a secured tape drive.
- **Only Write Secure Key to Blank Cartridges** - The secure key will only be written to blank, unformatted cartridges.
- **Write Secure Key to All Cartridges** - The secure key will be written to all cartridges, including blank and formatted cartridges containing data. This mode may be used to apply a secure key to cartridges with pre-existing data.

## Enable/Disable Secure Key for Drives

Figure 86 Enable/Disable Secure Key for Drives

Refer to [figure 86](#) for information on **Enable/Disable Secure Key for Drives**.

Cabinet	Drive	Model	Type	Serial No.	Secure Key
31	0	DLT-S4	Type	CX0535AMD00349	<input type="checkbox"/>

The secure key can only be used with tape drives that are secure key capable. This section lists the tape drives in the library that are secure key capable. A checkmark in the **Secure Key** column indicates a secure key is enabled for the tape drive.

- 1 The secure key can be enabled or disabled for all tape drives by clicking the corresponding radio button.
- 2 Click the **Secure Key** check box for individual tape drives to enable/disable secure key for a tape drive.
- 3 Click **Update** to activate the changes.

**Note:** The system must be offline to Enable/Disable Secure Key setting for drives.

---

## Select Secure Key for Library

---

Figure 87 Select Secure Key for Library

Refer to [figure 87](#) for information on **Select Secure Key for Library**.

**Select Secure Key for Library**

System must be offline to Select Secure Key for Library.

Current Library Secure Key Name:

Secure Key Name, Date Created

To select the secure key used by the library:

- 1 Select the secure key name from the list of available names.

**Note:** Selecting **None** will cause the library to NOT use a secure key.

- 2 Click **Update**.

**Note:** The system must be offline to modify a secure key.

---

## Assign Secure Key to Cartridge

---

Figure 88 Assign Secure Key to Cartridge

Refer to [figure 88](#) for information on **Assign Secure Key to Cartridge**.

**Assign Secure Key to Cartridge**

Find Secured Cartridges

Assigns a selected Secure Key to one or more cartridges (i.e. a cartridge imported from another system). Separate barcodes by spaces or commas. Selecting 'Remove' removes any association between a cartridge and a Secure Key.

Barcode

Secure Key Name, Date Created

Click **Find** to list all secured cartridges and their assigned secure key names.

To assign a secure key to a cartridge:

- 1 Enter the barcode of the cartridge. Separate multiple barcodes with either spaces or commas.
- 2 Select a secure key name from the list of available names.
- 3 Selecting **Remove** will remove the association between the cartridge and a secure key name in the cartridge database.
- 4 Click **Update** to accept the changes.

---

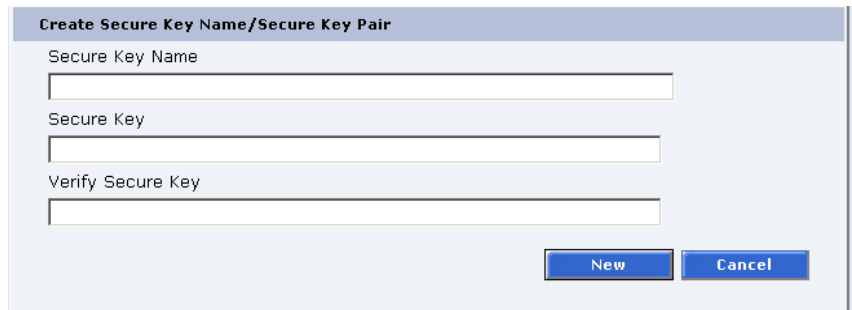
### Create Secure Key Name/ Secure Key Pair

---

Refer to [figure 89](#) for information on **Create Secure Key Name/Secure Key Pair**.

---

Figure 89 Create Secure Key  
Name/Secure Key Pair



The screenshot shows a dialog box titled "Create Secure Key Name/Secure Key Pair". It features three text input fields: "Secure Key Name", "Secure Key", and "Verify Secure Key". At the bottom right, there are two buttons: "New" and "Cancel".

To create a secure key name/secure key pair:

- 1 Enter the **Secure Key Name**.

**Note:** The secure key name must be less than 12 characters, may include spaces, but cannot contain the following characters: ( ) = ;

- 2 Enter a securekey in the protected **Secure Key** field.

- 3 Enter the same secure key in the **Verify Secure Key** field.

**Note:** The **Secure Key** must be at least 8 characters and no more than 32 characters. The **Secure Key** must also contain at least one non-alphanumeric character and cannot include spaces or double quotes (“”).

- 4 Click **New** to create the secure key name/key pair.

Refer to [figure 90](#) for information on **Delete Secure Key Name**.

## Delete Secure Key Name

Figure 90 Delete Secure Key Name

**Delete Secure Key & Secure Key Name**

**WARNING:** Deleting a Secure Key removes it from the system's memory. Any cartridges requiring this Secure Key will be unreadable on this system unless the Secure Key is restored. Backing up the Secure Key file is strongly recommended before deleting any Secure Keys.

Unused Keys:  
Secure Key Name, Date Created

Inactive Keys:  
Secure Key Name, Date Created

Active Keys:  
Secure Key Name, Date Created

**Delete** **Cancel**

The **Secure Key Names** maintained on the library are displayed in one of three lists:

- **Unused Secure Keys** - keys not associated with any cartridges or tape drives currently in the system.
- **Inactive Secure Keys** - keys associated with cartridges in the library, or currently assigned to the library, but not assigned to any tape drives.
- **Active Secure Keys** - keys currently assigned to a tape drive.

To delete a **Secure Key Name/Secure Key** pair from the library:

- 1 Select the desired **Secure Key Names** from the available lists.
- 2 Click **Delete**.

A confirmation message will be displayed, click **Yes** to continue.

Any tape drives that have been secure key enabled will remain enabled, but the secure key will not be used to read or write cartridges.

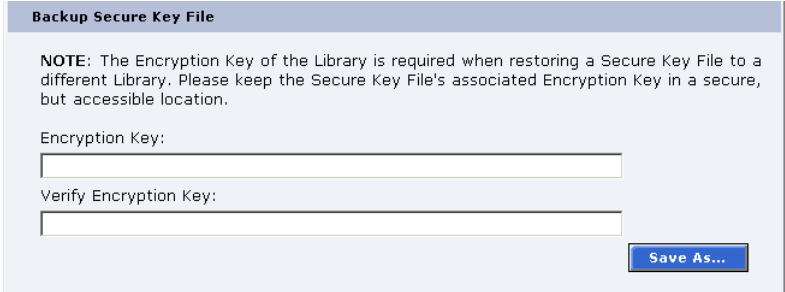
---

## Backup Secure Key File

---

Figure 91 Backup Secure Key File

Refer to [figure 91](#) for information on **Backup Secure Key File**.



**Backup Secure Key File**

**NOTE:** The Encryption Key of the Library is required when restoring a Secure Key File to a different Library. Please keep the Secure Key File's associated Encryption Key in a secure, but accessible location.

Encryption Key:

Verify Encryption Key:

**Save As...**

The list of **Secure Key Name/Secure Key Pairs** maintained on the library should be backed up to a local device whenever a change is made to the security keys.

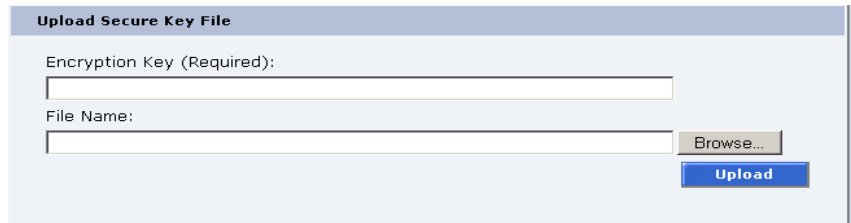
**Note:** Note the library's **Encryption Key**. The **Encryption Key** is required when restoring the file to any library.

- 1 Click **Save As...**  
The browser displays a download link.
- 2 Right-click on the download link and select **Save As...** to select a path and name the file.
- 3 Click **OK**.

## Upload Secure Key File

Figure 92 Upload Secure Key File

Refer to [figure 92](#) for information on **Upload Secure Key File**.



The screenshot shows a web form titled "Upload Secure Key File". It features two text input fields. The first is labeled "Encryption Key (Required):" and is empty. The second is labeled "File Name:" and is also empty. To the right of the "File Name:" field is a "Browse..." button. Below the "File Name:" field is a blue "Upload" button.

A file containing a list of **Secure Key Name/Secure Key Pairs** can be restored to the library.

**Note:** The user defined encryption key of the library originally maintaining the list is required to restore the file.

To upload (restore) a **Secure Key File**:

- 1 Enter the encryption key of the original library.
- 2 Enter the path and file name of the file to be uploaded (click **Browse...**)
- 3 Click **Upload** button.

A progress window is displayed indicating when the upload is complete or if any errors occurred during the upload or restoration of the file.

The **Secure Key** page is refreshed listing restored secure keys.

**Note:** An error is displayed if the encryption key provided does not match the encryption key used to encode the secure keys.

## Secure Key Best Practices and Tape Migration

This section provides information on “Best Practices” when implementing DLTSage Tape Security and also instructions for migrating your security keys from one library to another.

For more information on implementing DLTSage Tape Security with your specific library, refer to the following Quick Start Guides provided on the documentation CD included in the library accessory kit:

- *PX500 Series DLTSage Tape Security Quick Start Guide* PN 81-81627
- *PX720 DLTSage Tape Security Quick Start Guide* PN 81-81588

### Best Practices

When implementing DLTSage Tape Security in your tape library, there are several “Best Practices” or guidelines to consider:

- The encryption key file should be saved off of the library at least once a month or whenever a large amount of tapes is removed/added to the library. It is a good idea to use the date in the file name of the backup file.
- In the library remote management pages, the secure key and tape cartridge barcode associations are displayed when you click Find in the Assign Secure Key to Cartridge section without a specific barcode entered in the barcode edit box. You should save this file off of the library so the secure key and barcode associations are available in case of disaster recovery or when moving the tapes from one library to another. This also makes it easy to copy and paste the barcode numbers into the PX720 and PX500 Series remote management pages when associating barcodes with secure keys.
- Secure key and encryption password information should NOT be stored in unsecured areas.

### Key Migration Scenarios

The following examples describe two key migration scenarios:

- [Disaster Recovery Scenario](#)
- [Tape Cartridge Migration Scenario](#)



## Disaster Recovery Scenario

In the disaster recovery scenario, the original library is inoperable, but secure keys and barcode associations have been saved off of the system and are available on the network.

- 1 Remove the tape cartridges and place them in another tape security enabled library.
- 2 Follow the steps listed below (beginning with step 2) to import cartridges and associate barcodes with secure keys.

## Tape Cartridge Migration Scenario

In this tape cartridge migration example, tape cartridges have been secured in one tape library (PX720 or PX500 series) and you want to move them into another PX720 or PX500 series library and access them:

- 1 On the original library containing the cartridges:
  - a Access the library remote management screens.
  - b In the **Backup Secure Key** file section, backup the secure key file. This encrypted file contains all of the secure keys and bar code associations in the original library. Once you click **Save as...** you must right-click on the download link to save the file local directory. This file must be located on a network resource that is available to the new library.
  - c Export the tape cartridges from the library.
- 2 On the new library:
  - a Import the tape cartridges into the new library.
  - b Upload the secure key file from the original library:
    - If you are uploading a backup file from a PX720 to a PX500 series library, you must enter the serial number of the original PX720 in the **Encryption Key** field, browse to the backup file, and click **Upload**.
    - If you are uploading a file from a PX500 series library to a PX720, you must enter the user defined key name in the **Serial number** field, browse to the backup file, and click **Upload**.
  - c When the file is uploaded, the secure keys from the original library display in the secure key name list.

The tape cartridges are now available for reading and writing.

# Utilities

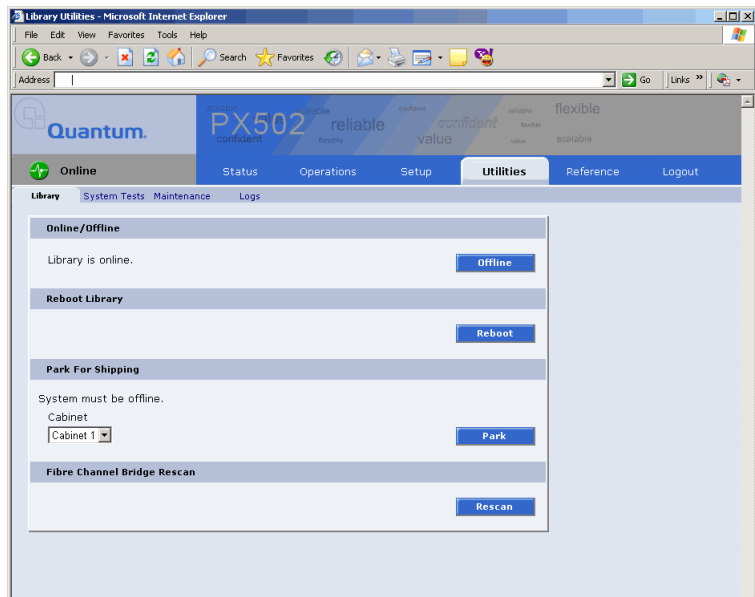
The **Utilities** page is divided into the following sections:

- [Library](#)
- [System Tests](#)
- [Maintenance](#)

1 To access the **Utilities** page, from the **Overview** page, click on the **Utilities** tab at the top of the page.

The **Utilities** page displays (see [figure 93](#)):

Figure 93 Utilities Page



## Library

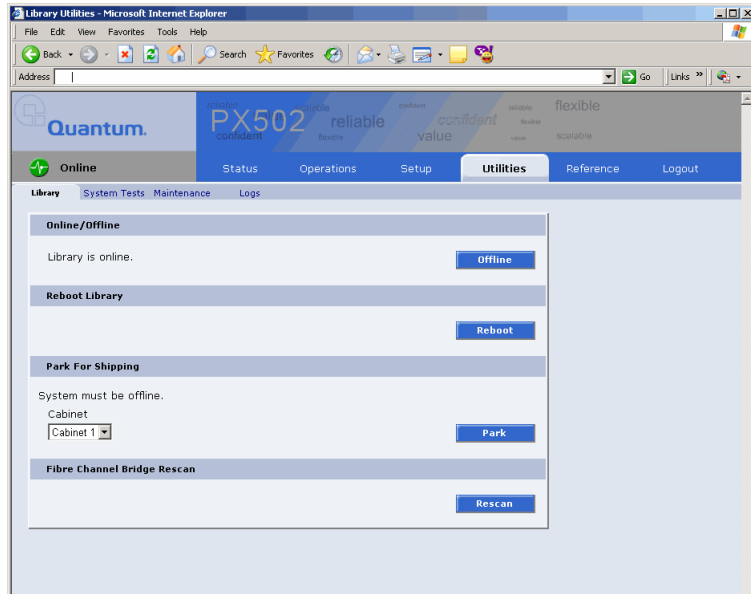
The library page is divided into the following sections:

- [Online/Offline](#)
- [Reboot Library](#)
- [Park for Shipping](#)
- [Fibre Channel Bridge Rescan](#)

To access the **Library** page, from the **Utilities** page, click on the **Library** tab at the top of the page.

The **Library** page displays (see [figure 94](#)):

Figure 94 Library Page



### Online/Offline

The online/offline button allows the user to turn the cabinet online or offline remotely. The action displayed on the button will depend on the current state of the library or cabinet. If the library (cabinet) is online, **Offline** button will be displayed. If the library (cabinet) is in the offline state, an **Online** button will be displayed.

To change the library online/offline:

- 1 Click the button to change the library state to online or offline.

The library changes state to online or offline.

## Reboot Library

The **Reboot Library** button allows you to remotely reboot the library.

To reboot the library:

- 1 Click **Reboot**.

The library reboots.

## Park for Shipping

**Note:** You must remove all tape cartridges from the library prior to parking the library robotics for shipment.

The **Park for Shipping** button allows you to remotely park the robot for library shipment. This places the library gripper in the correct position for shipment and powers down the library, **HOWEVER**, you must place the library shipping restraints on the library gripper prior to shipping the library. Refer to [appendix D](#) on page 229 for more information on shipping the library.

**Caution:** Shipping the library without installing the library gripper shipping restraints may result in damaging the gripper.

To park the library gripper:

- 1 Select the cabinet and click the **Park** button.

The library gripper moves to the shipment position.

## Fibre Channel Bridge Rescan

The Fibre Channel bridge rescan button re-discovers any FC bridges installed in the cabinet. Details of the scan will be presented under **FC Bridge** tab.

To rescan Fibre Channel bridges installed in the cabinet:

- 1 Click **Rescan**.

The Fibre Channel bridges are scanned.

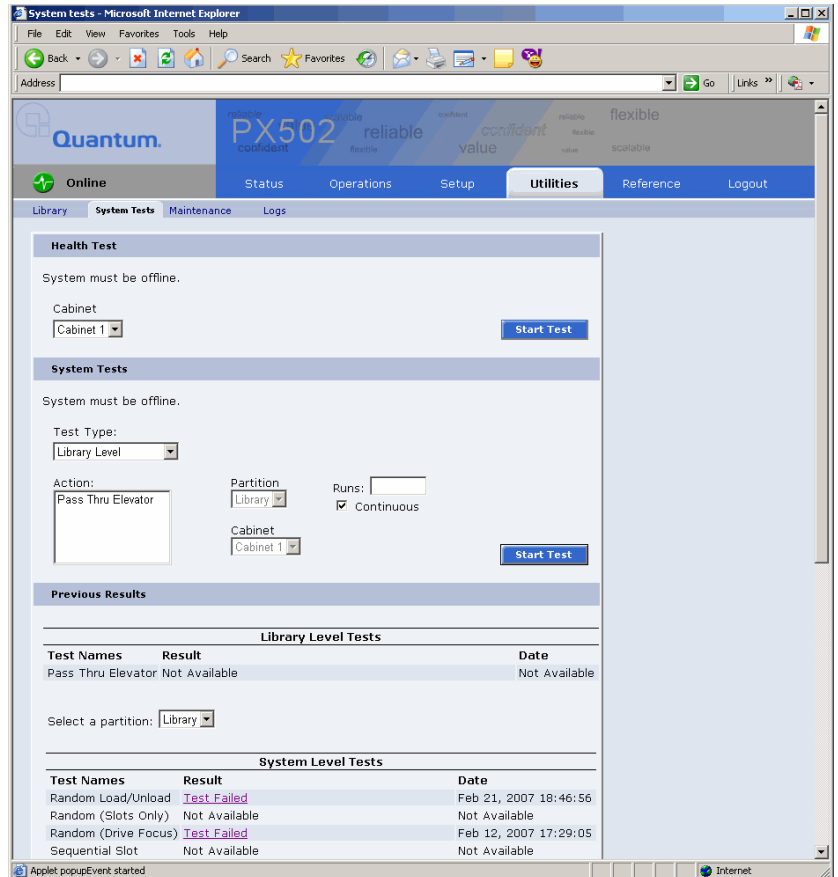
## System Tests

The system tests section allows the user to run a series of tests on an individual cabinet axis.

- 1 To access the **System Test** page, from the **Utilities** page, click on the **System Test** tab at the top of the page.

The **System Test** page displays (see [figure 95](#)).

Figure 95 Selftest Page



To run a **Health Test** on a cabinet:

**Note:** The library must be off-line before executing any health tests.

- 1 Click the **Start Test** button.

The system performs a health test on all robotic axis. Previous test results can be viewed below.

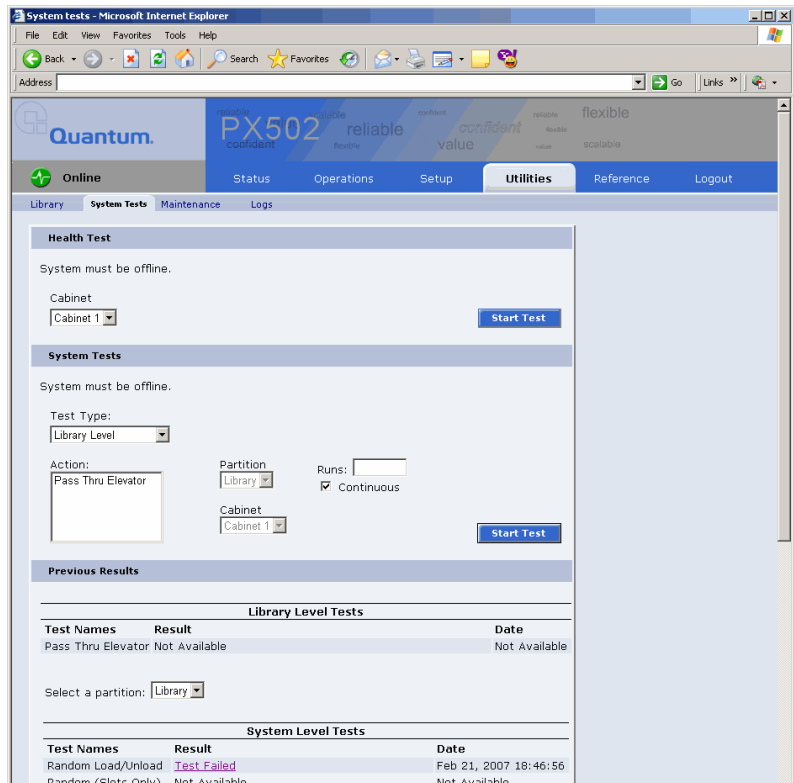
### System Tests

The system test section allows the user to run a series of tests on an individual cabinet axis.

- 1 To access the **System Tests** page, from the **Utilities** page, click on the **System Tests** tab at the top of the page.

The **System Tests** page displays (see [figure 96](#)).

Figure 96 System Tests Page



To run a **System Test** on a cabinet:

**Note:** The library must be off-line before executing any system tests.

- 1 Select an action and a number of runs and click **Apply**.

The cabinet performs the system test. If you leave the runs field empty, the system test will run continuously until you abort the system test. Previous test results can be viewed below.

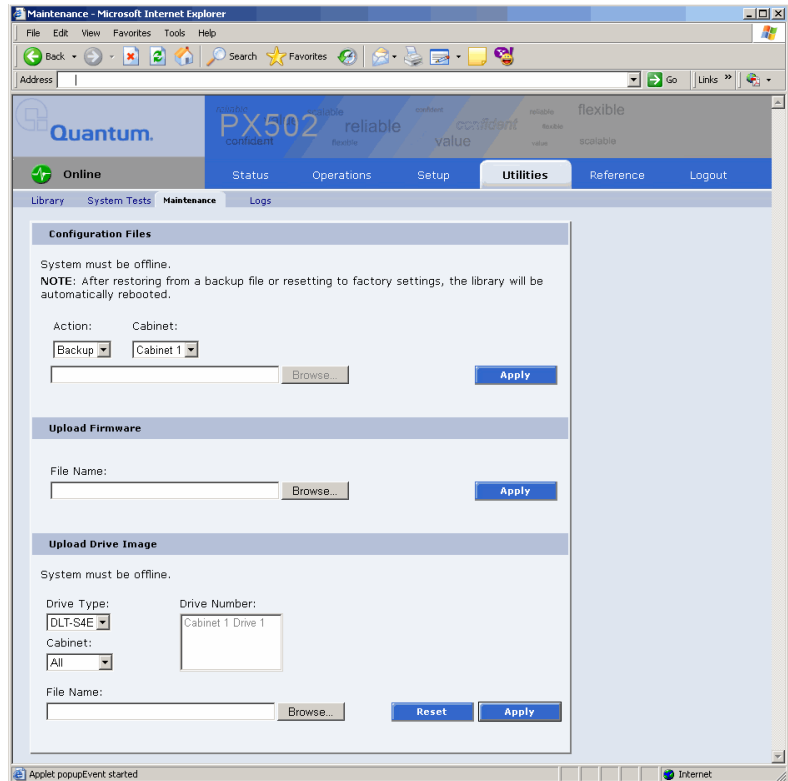
## Maintenance

The maintenance section allows the user to backup or restore system configuration files as well as upload new cabinet firmware.

- 1 To access the **Maintenance** page, from the **Utilities** page, click on the **Maintenance** tab at the top of the page.

The **Maintenance** page displays (see [figure 97](#)).

Figure 97 Maintenance Page



## Configuration Files

Configuration files contain all of the configurable information on the library (see [table 30](#) for file types). This configuration file should be saved on a local host on the same network. If the library configuration file is corrupted, this backup configuration file can be uploaded back to the library without reconfiguring the entire library.

Table 30 Configuration File Types

Configuration File Type	Description
Backup	Select <b>Backup</b> to save all user, network, and library configuration information. Use this file to replace all configurable options on the library.
Restore	Select <b>Restore</b> to restore a configuration file from your computer to the library.
Factory	Select <b>Factory</b> to restore the library to its default factory configuration settings.

- 1 Select file type and click on **Apply**.

**Note:** After restoring configuration files or factory default settings, the library will automatically reboot.

## Upload Firmware

The upload firmware section allows the user to remotely upload new firmware to the library.

To upload firmware:

- 1 Enter a path and filename where the file exists, or click **Browse**.
- 2 Click **Apply** to upload the file.

The firmware image uploads to the library and reboots the library.



## Upload Drive Image

The upload drive image section allows the user to remotely upload new tape drive firmware to a specific tape drive within the library.

To upload drive firmware:

**Note:** The library must be offline to update the drive firmware.

- 1 Select an individual tape drive and number or select an entire cabinet to update the drive firmware for all tape drives within the library cabinet.
- 2 Enter a path and filename where the tape drive firmware exists, or click **Browse**.
- 3 Click **Apply** to upload the file.

The firmware image uploads to the tape drive(s) and reboots the library.

---

## Logs

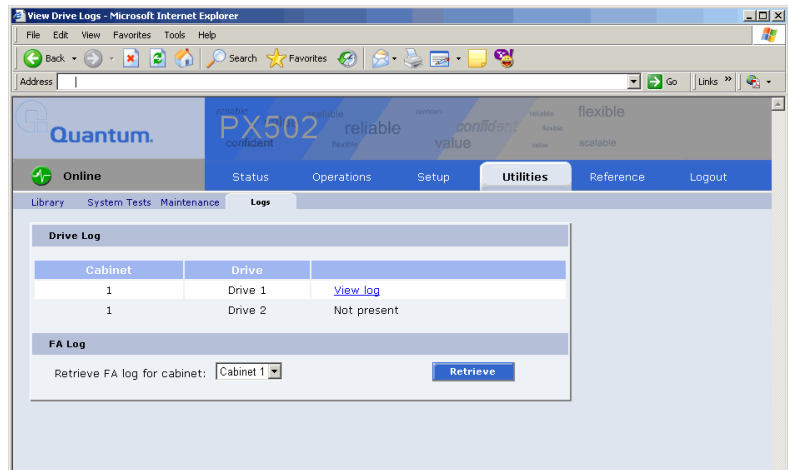
---

The **Logs** page displays the drive logs for the individual tape drives within the library and also a failure analysis file.

To access the **Logs** page, from the **Utilities** page, click on the **Logs** tab at the top of the page.

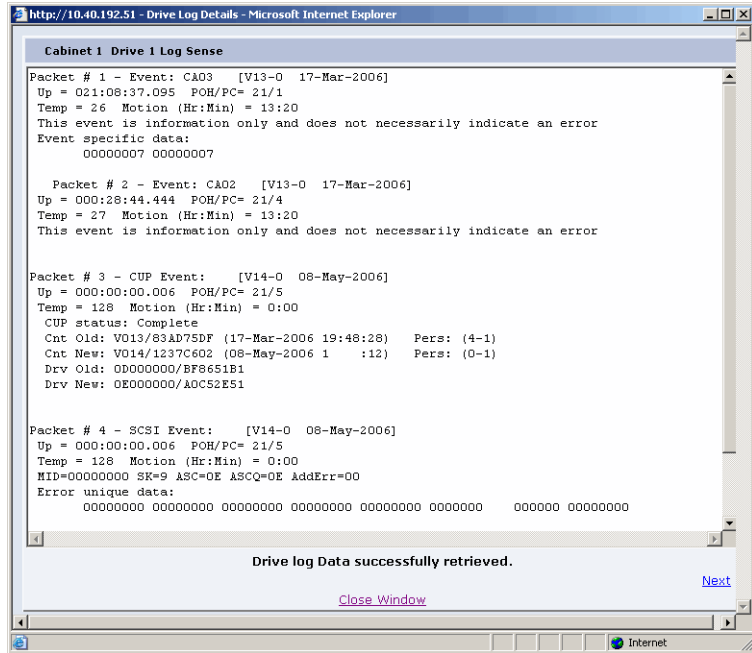
The **Logs** page displays (see [figure 98](#)):

Figure 98 Logs Page



Click the **View Log** link to view the log file for a specific tape drive (see [figure 99](#)). The log sense information for the tape drive displays. Click **Next** to see additional log sense information.

Figure 99 View Log Page



To retrieve a FA log file (failure analysis), click **Retrieve**.

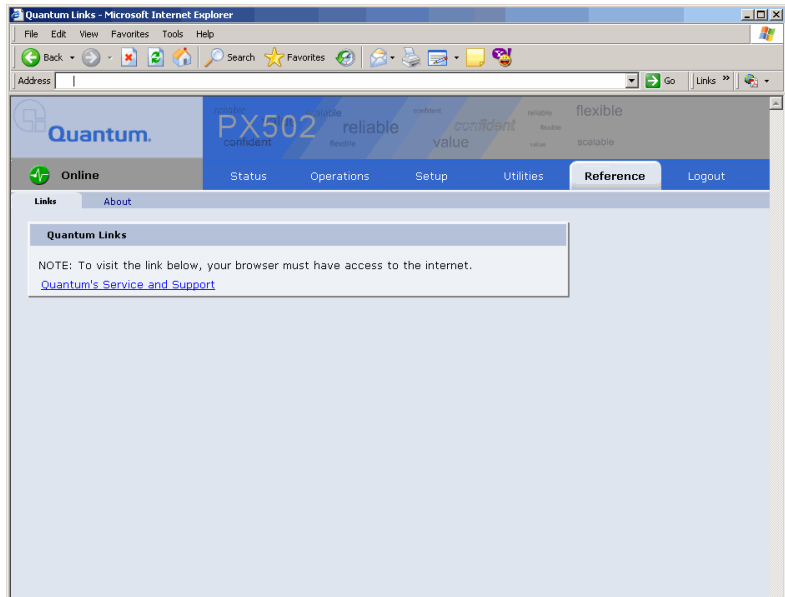
## Reference

The links on this page provide access to various points of interest which may be helpful in the operation and support of your library. Your browser must have access to the internet for these links to work.

- 1 To access the **Reference** page, click on the **Links** tab at the top of the page.

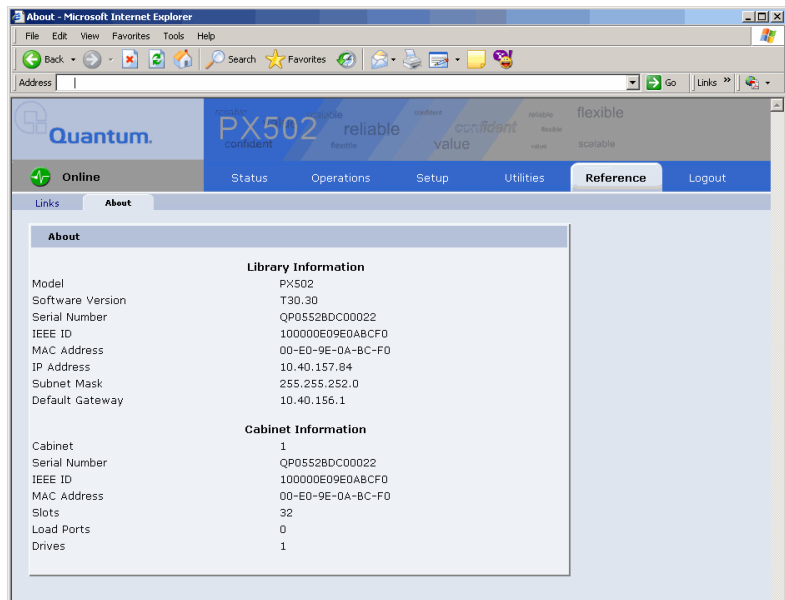
The **Links** page displays (see [figure 100](#)).

Figure 100 Reference Page



- To access the **About** page, click the **About** tab at the top of the page. The **About** page displays the model number, software version, serial number, and slot/drive configuration (see [figure 101](#)).

Figure 101 About Page



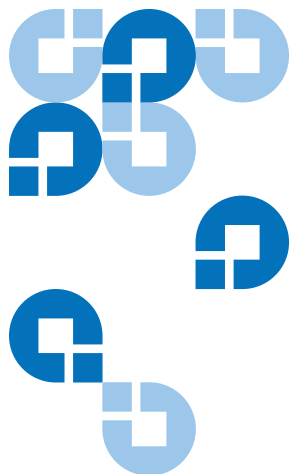
---

# Logout

The **Logout** page allows you to logout of the PX500 remote management pages.

To logout of the library remote management pages, click **Logout**.

The session is closed. Start a new session by re-authenticating when prompted or close your browser.



## Chapter 4

# SNMP Trap List

---

This chapter provides the supported SNMP trap list for the PX500 Series tape libraries. The following table is sorted by the **Reported By** column:

- 1 **Code Update**
- 2 **Diagnostic**
- 3 **Drive Manager**
- 4 **Event Manager**
- 5 **Image Process**
- 6 **OCP**
- 7 **SCSI**
- 8 **Servo**
- 9 **System Manager**
- 10 **System Monitor**

**Event Details** - indicates the text that appears on the OCP and also in the Remote Management web pages.

**Event Description** - provides a more detailed description of the event that occurred.

**Category** - indicates the type of SNMP trap (**Informational**, **Warning**, or **Critical**)

**Reported By** - indicates the area of firmware that reported the event.

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Start Backup System Codeupdate (type/dest)	A backup flash update was attempted.	Informational	Code update
Start Sled Codeupdate (type/dest)	A drive sled update was attempted.	Informational	Code update
Start Drive Codeupdate (type/dest)	A drive update was attempted.	Informational	Code update
Loader Image size larger than hdr entry (image size)	The library failed the version verification test.	Critical	Code update
Loader Image size smaller than hdr entry (image size)	The library failed the version verification test.	Critical	Code update
Loader Image too large for allocated memory (image size)	The library failed the version verification test.	Critical	Code update
Invalid boot image	The boot code used to initialize the system is invalid. Update the library firmware with the latest version of code.	Critical	Code update
Invalid drive image (type/dest)	The tape drive software downloaded into the library memory is invalid.	Critical	Code update
Invalid system image (location)	The library software used for system operation is invalid. Update the library firmware with the latest version of code.	Warning	Code update
Start System Codeupdate (type/dest)	A loader update was attempted.	Informational	Code update
Codeupdate successful (type/dest)	A code update has completed.	Informational	Code update

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Codeupdate failed (status)	A code update has failed.	Informational	Code update
Backplane nv erase err (region id/status)	Non Volatile memory on the back plane could not be erased. Replace the backplane to restore normal library operations.	Critical	Diagnostics
Backplane nv read err (region id/status)	Non Volatile memory on the back plane could not be read. Replace the backplane to restore normal library operations.	Critical	Diagnostics
Backplane nv write err (region id/status)	Non Volatile memory on the back plane could not be written. Replace the backplane to restore normal library operations.	Critical	Diagnostics
Hand-camera image fail	The camera in the robotics hand has failed to read an image.	Critical	Diagnostics
Hand-camera init fail	The camera in the robotics hand has failed its initialization routine.	Critical	Diagnostics
Selftest Camera FIFO failure	The camera in the robotics hand has failed to read its memory used to transfer data.	Critical	Diagnostics
Selftest display bram failure	The diagnostic buffer used to report test results is not large enough to hold the data.	Critical	Diagnostics
Scb-fpga camera fifo fail	The memory on the system controller board has failed to read the memory used to transfer data.	Critical	Diagnostics
Test details buffer overflow (len/ testId)	The diagnostic buffer used to report test results is not large enough to hold the data.	Critical	Diagnostics
Test record semaphore locked (index/tx-status)	An internal firmware error has occurred.	Critical	Diagnostics

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Test structure corrupt (testId)	An internal firmware error has occurred.	Critical	Diagnostics
Insufficient num cart for test (num)	Not enough tape cartridges in the library to complete the system test.	Warning	Diagnostics
Insufficient num drives for test (num)	Not enough tape drives in the library to complete the system test.	Warning	Diagnostics
Insufficient num empty slots for test (num)	Not enough empty bins in the library to complete the system test.	Warning	Diagnostics
Hand-cal offset fail	The calibration test used to compute offsets for the robotic hand has failed.	Critical	Diagnostics
Hand-theta cal offset fail	The calibration test used to compute offsets for the robotic hand in rotation has failed.	Critical	Diagnostics
Hand-trans cal offset fail	The calibration test used to compute offsets for the robotic hand in translation has failed.	Critical	Diagnostics
XY & hand cal offset fail	The calibration test used to compute offsets for the robotics tray has failed.	Critical	Diagnostics
XY & hand_theta cal offset fail	The calibration used to compute offsets for the robotics tray and robotics hand has failed.	Critical	Diagnostics
XY & hand_trans cal offset fail	The calibration test used to compute offsets for the robotics tray and robotics rotation has failed.	Critical	Diagnostics
XY & Z cal offset fail	The calibration test used to compute offsets for the robotics tray and the robotics up/down motion has failed.	Critical	Diagnostics



<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
XY-cal offset fail	The calibration test used to compute offsets for the robotics tray has failed.	Critical	Diagnostics
Z & hand cal offset fail	The calibration test used to compute offsets for the robotics tray up/down and robotics hand has failed.	Critical	Diagnostics
Z & hand_theta cal offset fail	The calibration test used to compute offsets for the robotics tray up/down and robotics hand rotation has failed.	Critical	Diagnostics
Z & hand_trans cal offset fail	The calibration test used to compute offsets for the robotics tray up/down and robotics hand translation has failed.	Critical	Diagnostics
Z-cal offset fail	The calibration test used to compute offsets for the robotics tray up/down has failed	Critical	Diagnostics
Hand-trans axis init fail	The robotic hand could not initialize the translation axis.	Critical	Diagnostics
Hand-trans home fail	The robotic hand could not home the translation axis.	Critical	Diagnostics
Hand-trans motor fail (zone #)	The robotic hand has failed to position translation to a predetermined physical location.	Critical	Diagnostics
Hand-theta axis fail (zone #)	The robotic hand has failed to position rotation to a predetermined physical location.	Critical	Diagnostics
Hand-theta axis init fail	The robotic hand could not initialize the rotation axis.	Critical	Diagnostics
Hand-theta home fail	The robotic hand could not home the rotation axis.	Critical	Diagnostics

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Hand-theta motor fail (zone #)	The robotic hand has failed to position rotation to a predetermined physical location.	Critical	Diagnostics
Hand-theta neg position fail (zone #)	The robotic hand has failed to position rotation to a predetermined physical location.	Critical	Diagnostics
Hand-theta pos position fail (zone #)	The robotic hand has failed to position rotation to a predetermined physical location.	Critical	Diagnostics
Hand-theta position fail	The robotic hand has failed to position rotation to a predetermined physical location.	Critical	Diagnostics
API msg que send shutdown err (tx-status)	An internal API could not send a shutdown message.	Critical	Diagnostics
API send response que err (tx-status/fromId)	An internal API received a command message error.	Critical	Diagnostics
API send test msg que err (tx-status/fromId)	An internal API received a command message error.	Critical	Diagnostics
Bad sender for get resp que (taskId/sender)	An internal API received a command message error.	Critical	Diagnostics
Create main msg que err (tx-status)	An internal API received a command message error.	Critical	Diagnostics
Create response msg que err (tx-status)	An internal API received a command message error.	Critical	Diagnostics
Main msg que receive err (tx-status)	An internal API received a command message error.	Critical	Diagnostics
Response msg que receive err (tx-status)	An internal API received a command message error.	Critical	Diagnostics
Create test record semaphore err (tx-status)	An internal API received a command message error.	Critical	Diagnostics

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Ralu rnd number generator reset	The random number generator used to calculate the slot locations for the internal Random Access Load Unload (RALU) function has been reset.	Informational	Diagnostics
Elem move failed limits check	A move to an element failed a calibration limit.	Warning	Diagnostics
Hand-communication fail	The communications to the robotic hand has failed.	Warning	Diagnostics
XYZ-communication fail	The communication to the robotic hardware for moving the X,Y and Z axis has failed.	Warning	Diagnostics
Timeout waiting for response (status/taskId)	A command sent by the diagnostics module has timed out waiting for a return from another module in the system.	Critical	Diagnostics
Z-axis init fail	The Z (vertical) axis initialization routine has failed.	Critical	Diagnostics
Z-motor fail (zone #)	The robotic hand has failed to position the vertical axis to a predetermined physical location.	Critical	Diagnostics
Z-position fail (zone #)	The robotic hand has failed to position the vertical axis to a predetermined physical location.	Critical	Diagnostics
X-position fail (zone #)	The robotic hand has failed to position the XY axis to a predetermined physical location.	Critical	Diagnostics
XY-home fail	The XY axis initialization routine has failed to find its home position.	Critical	Diagnostics
XY-motor fail (zone #)	The robotic hand has failed to position the XY axis to a predetermined physical location.	Critical	Diagnostics

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
XY-position fail	The robotic hand has failed to position the XY axis to a predetermined physical location.	Critical	Diagnostics
XY-safe to rotate fail	The safe to rotate sensor used to home the XY axis could not be seen by the calibration routine.	Warning	Diagnostics
Y-position fail (zone #)	The robotic hand has failed to position the XY axis to a predetermined physical location.	Critical	Diagnostics
Bad SCSI Sense Data	A command sent to the drive received bad sense data.	Warning	Drive Manager
Aborted any open exchanges	Drive communications has failed.	Informational	Drive Manager
ADT login failed	The library failed to login and set up communication to a drive.	Critical	Drive Manager
Bad reply received	The drive did not return a valid response.	Warning	Drive Manager
Login failed, too many retries	The library could not initiate communications with the drive.	Warning	Drive Manager
Login failed, no response	Drive did not respond correctly to the login command sequence.	Warning	Drive Manager
Unexpected login, not handled or requested	The drive unexpectedly sent a login request.	Informational	Drive Manager
ACI invalid Response	The HP Gen 2 Drive returned an invalid command response.	Warning Critical	Drive Manager
Command Id not supported	This command is not supported by the drive.	Critical	Drive Manager
Could not send adt logout	Drive communications (possibly due to hardware) is lost.	Critical	Drive Manager
Message Id not supported	Command is not supported by the drive.	Critical	Drive Manager

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Response ServiceType not supported	The drive does not support the requested operation.	Warning Critical	Drive Manager
SCSI Response ptr is NULL ptr	Drive did not return proper data to the requested command.	Critical	Drive Manager
SCSI unsupported response code	Drive does not support the requested command.	Critical	Drive Manager
Too many busy retries	The drive has responded with too may busy responses.	Warning	Drive Manager
Unknown protocol type	Drive communication protocol is not recognized.	Critical	Drive Manager
Malloc block failed	The system has run out of internal memory.	Critical	Drive Manager
Drive wait que error	The system has run out of internal memory.	Critical	Drive Manager
Sema error	The operating system has failed to create a resource.	Critical	Drive Manager
Sema put failed	The operating system has failed to create a resource.	Critical	Drive Manager
Could not activate event timer	The operating system has failed to create a timer resource.	Warning	Drive Manager
Could not activate util timer	The operating system has failed to create timer resource.	Warning	Drive Manager
Could not change event timer	The operating system has failed to modify a timer resource.	Warning	Drive Manager
Could not change util timer	The operating system has failed to modify a timer resource.	Warning	Drive Manager

Event Detail	Event Description	Category	Reported By
System reset by hardware (code/srr0)	Codes are: <ul style="list-style-type: none"> <li>• CRITICAL 0x1111</li> <li>• MACHINE_CHECK 0x2222</li> <li>• ID_DATA_STORAGE 0x3333</li> <li>• ISI_EXCEPTION 0x4444</li> <li>• ALIGNMENT_EXCEPTION x5555</li> <li>• PROGRAM_EXCEPTION x6666</li> <li>• SYSTEM_CALL 0x7777FIT 0x8888</li> <li>• WATCHDOG 0x9999</li> <li>• INT_ID_DATA_TLB 0xA AAAA</li> <li>• INT_ID_INST_TLB 0xB BBBB</li> <li>• INT_ID_DEBUG 0xC CCCC</li> <li>• INT_ID_RESET</li> <li>• srr0 is always 0</li> </ul>	Critical	Event Manager
System reset by software (0/0)	System has been reset by the system software.	Critical	Event Manager
System reset by watchdog timer (0/0)	System has been reset by the internal watchdog timer.	Critical	Event Manager
System power failed (0/0)	System power has failed internal monitoring limits.	Critical	Event Manager
(re)Booted for unknown reason (post fail/sled:qsb)	An unexpected reboot has occurred.	Critical	Event Manager

Event Detail	Event Description	Category	Reported By
Rebooted by hardware trap (post fail/sled:qsb)	Serial Bus channel: <ul style="list-style-type: none"> <li>• Drive Channel 89 - 0x00000200</li> <li>• Drive Channel 67 - 0x00000100</li> <li>• Drive Channel 45 - 0x00000080</li> <li>• Drive Channel 23 - 0x00000040</li> <li>• Drive Channel 01 - 0x00000020</li> <li>• Front Panel - 0x00000010XYZ - 0x00000008</li> <li>• Hand - 0x00000004</li> <li>• Regulator Module - 0x00000002</li> <li>• Backplane - 0x00000001</li> </ul>	Informational	Event Manager
Rebooted by software trap (post fail/sled:qsb)	An unexpected reboot has occurred.	Informational	Event Manager
Rebooted by CPU watchdog (post fail/sled:qsb)	An unexpected reboot has occurred.	Informational	Event Manager
Rebooted by code load (post fail/sled:qsb)	An unexpected reboot has occurred.	Informational	Event Manager
Powered on (post fail/sled:qsb)	An unexpected reboot has occurred.	Informational	Event Manager
Booted after power failed (post fail/sled:qsb)	An unexpected reboot has occurred.	Informational	Event Manager
User requested reboot (post fail/sled:qsb)	An unexpected reboot has occurred.	Informational	Event Manager

Event Detail	Event Description	Category	Reported By
Camera failed POST (event class/failure detail)	Event Classes: <ul style="list-style-type: none"> <li>• Internal Firmware Failure 0x24</li> <li>• Operating System Failure - 0x43 and 0x44</li> <li>• Camera Init Failure 0x7C</li> <li>• Failure details are listed below.</li> </ul>	Critical	Image proc
Camera initialization failed (camera code)	Failure Codes: <ul style="list-style-type: none"> <li>• Camera was reset, try again 0x0D</li> <li>• Write data doesn't match read data 0x0C</li> <li>• Counter doesn't match data mount 0x0B</li> <li>• Interrupt not received at 3/40 0x0A</li> <li>• Interrupt received too early 0x09</li> <li>• Problem reading control regs 0x08</li> <li>• Problem writing control regs 0x07</li> <li>• I2C channel problem 0x06</li> <li>• image data is truncated or missing 0x05</li> <li>• Invalid image format 0x04</li> <li>• Can't set camera's data window 0x03</li> <li>• Firmware bug detected 0x02</li> <li>• Camera is not operating or unrecognized 0x01</li> <li>• No problems detected 0x00</li> </ul>	Critical	Image proc



<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Camera was unexpectedly reset	The internal camera has been reset since the last time the system was powered on.	Warning	Image proc
Couldn't get mutex for camera I2C (thrdx status)	The operating system has failed to create a resource.	Warning	Image proc
Unknown status for OCP status LED (lib status)	The Front Panel hardware is in an unknown state.	Warning	OCP
Internal request to send null SCSI CDB	The operating system failed to create a proper SCSI command data block.	Critical	SCSI
Queue insert failed when receiving data out	The operating system has failed to create a resource for the SCSI module.	Critical	SCSI
SCB null in Release SCB	The information in the SCSI command is not present.	Critical	SCSI
SCB null when receiving data out	The information in the SCSI command is not present.	Critical	SCSI
SCB null	The information in the SCSI command is not present.	Critical	SCSI
Semaphore put failed when receiving data out	The operating system has failed to create a resource.	Critical	SCSI
Unexpected data out received	Data out was received from the host, but the SCSI server (the current SCB) was not in a state to receive the data.	Critical	SCSI
Unexpected data received	Data in was unexpectedly sent to the host	Critical	SCSI

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Unexpected response - no non-immed	A response to an outstanding non-immediate command was received and SCSI server did not know about the non-immediate command.	Critical	SCSI
Unexpected response - wrong state	A response to an outstanding non-immediate command was received and SCSI server did not know about the non-immediate command.	Critical	SCSI
No SCBs available	The operating system has failed to create a resource.	Critical	SCSI
Release failed in Release SCB	The operating system has failed to create a resource.	Critical	SCSI
Queue insert failed when receiving a SCSI command	The operating system has failed to create a resource.	Critical	SCSI
Queue insert failed	The operating system has failed to create a resource.	Critical	SCSI
Semaphore put failed when receiving a SCSI command	The operating system has failed to create a resource.	Critical	SCSI
Semaphore put failed	The operating system has failed to create a resource.	Critical	SCSI
Servo Initialization Failure	The system has failed to initialize the robotics.	Critical	Servo
Cartridge not in hand after get from magazine	The robotics did not detect a cartridge present when a tape was pulled from the magazine.	Warning	Servo
Servo Initialization Is Complete	The system has succeeded in initializing the robotics.	Informational	Servo

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Picker Axis Jammed	The portion of the robotics that picks the tape can not move is respective motor.	Warning	Servo
Picker Axis Position Lost	The portion of the robotics that picks the tape can not move its respective motor to the expected internal limits.	Warning	Servo
Picker Axis Retry	The portion of the robotics that picks the tape has exceeded internal retries.	Warning	Servo
Picker Axis Stalled	The portion of the robotics that picks the tape can not move its respective motor to the expected internal limits.	Warning	Servo
Picker Axis Timeout	The portion of the robotics that picks the tape could not position within its allotted time.	Warning	Servo
Theta Axis Jammed	The portion of the robotics that rotates can not move its respective motor.	Warning	Servo
Theta Axis Position Lost	The portion of the robotics that rotates can not move its respective motor to the expected internal limits.	Warning	Servo
Theta Axis Retry	The portion of the robotics that rotates theta has exceeded internal retries.	Warning	Servo
Theta Axis Stalled	The portion of the robotics that rotates can not move its respective motor to the expected internal limits.	Warning	Servo
Theta Axis Timeout	The portion of the robotics that rotates theta could not position within its allotted time.	Warning	Servo

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
XY Axis Jammed	The portion of the robotics that moves the XY axis can not move its respective motor.	Warning	Servo
XY Axis Position Lost	The portion of the robotics that moves the XY axis can not move its respective motor to the expected internal limits.	Warning	Servo
XY Axis Retry	The portion of the robotics that moves XY has exceeded internal retries.	Warning	Servo
XY Axis Stalled	The portion of the robotics that moves the XY axis can not move its respective motor to the expected internal limits.	Warning	Servo
XY Axis Timeout	The portion of the robotics that moves XY could not position within its allotted time.	Warning	Servo
Z Axis Jammed	The portion of the robotics that positions Up and Down can not move its respective motor.	Warning	Servo
Z Axis Position Lost	The portion of the robotics that moves the Up/Down axis can not move its respective motor to the expected internal limits.	Warning	Servo
Z Axis Retry	The portion of the robotics that moves Up and Down has exceeded internal retries.	Warning	Servo
Z Axis Stalled	The portion of the robotics that moves the Up/Down axis can not move its respective motor to the expected internal limits.	Warning	Servo
Z Axis Timeout	The portion of the robotics that moves Up and Down could not position within its allotted time.	Warning	Servo

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Position to XYZ Failed	Robotics could not move to any axis position.	Warning	Servo
Failed to read NVM (status, region)	The robotics backplane has failed.	Critical	Sys manager
Failed to write NVM (status, region)	The robotics backplane has failed.	Critical	Sys manager
Init element structure failed	A firmware error has occurred.	Critical	Sys manager
Read from NV (backplane SPI) failed (status)	The robotics backplane has failed.	Warning	Sys manager
Could not convert GUI addr to physical (elem type/instance)	Bad element address.	Warning	Sys manager
Could not convert logical addr to physical (elem type/instance)	Bad element address.	Warning	Sys manager
Could not find drive element in partition (instance/part id)	Bad element address.	Warning	Sys manager
Could not find load port in cabinet (instance/cab index)	Bad element address.	Warning	Sys manager
Could not find load port in partition (instance/part id)	Bad element address.	Warning	Sys manager
Could not find storage element in cabinet (instance/cab index)	Bad element address.	Warning	Sys manager
Could not find storage element in partition (instance/part id)	Bad element address.	Warning	Sys manager

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Drv type from dmgr is not known (type)	A firmware error has occurred.	Critical	Sys manager
Failed to send response (status)	A firmware error has occurred.	Critical	Sys manager
Invalid element type in get SCSI Start Addr (type/sys Id)	Bad element address.	Warning	Sys manager
Invalid element type in get element count (type/sys Id)	Bad element address.	Warning	Sys manager
Receive async element status - invalid data type (type)	A firmware error has occurred.	Critical	Sys manager
Receive async element status - null element (type, index)	A firmware error has occurred.	Critical	Sys manager
SCSI Address does not convert to valid element type (addr/sys id)	Bad element address.	Informational	Sys manager
Sensor grp unknown (grp)	A firmware error has occurred.	Warning	Sys manager
Stack data received and no buffer to store it (cab index, offset)	A firmware error has occurred.	Warning	Sys manager
Stack message received unexpectedly (cab index, state)	A firmware error has occurred.	Warning	Sys manager
Unexpected response received (txid/sender)	A firmware error has occurred.	Informational	Sys manager
Unknown cleaning cartridge requested (drv elemType)	A firmware error has occurred.	Critical	Sys manager

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Cleaning tape not found (tape type)	An operation failed.	Warning	Sys manager
Cleaning tape not loaded for clean op (drvNum)	An operation failed.	Critical	Sys manager
Drive cleaning operation failed (drvNum, status)	An operation failed.	Critical	Sys manager
Stack message received while one in progress (cab index, offset)	A stack communication error has occurred.	Informational	Sys manager
Allocate failed (threadX status/pool)	A TX blk pool op error has occurred.	Critical	Sys manager
Create data pool failed (threadX status)	A TX blk pool op error has occurred.	Critical	Sys manager
Create elem pool failed (threadX status)	A TX blk pool op error has occurred.	Critical	Sys manager
Create label pool failed (threadX status)	A TX blk pool op error has occurred.	Critical	Sys manager
Release failed (threadX status)	A TX blk pool op error has occurred.	Critical	Sys manager
Create failed (threadX status/que)	A TX blk queue op error has occurred.	Critical	Sys manager
Receive failed (threadX status)	A TX blk queue op error has occurred.	Critical	Sys manager
Send failed (msgid/threadX status)	A TX blk queue op error has occurred.	Critical	Sys manager
Create failed (threadX status)	A TX blk semaphore op error has occurred.	Critical	Sys manager
Create failed (threadX status)	A TX blk timer op error has occurred.	Critical	Sys manager
Shutdown timer expired (task mask)	Time limit has expired.	Informational	Sys manager

Event Detail	Event Description	Category	Reported By
Fan speed critical(0,id) Fan speed warning(0,id)	Fan monitoring <ul style="list-style-type: none"> <li>• id Blake 0 B1   B2   B3 " PSU0"</li> <li>• 1 B1   B2   B3 " PSU1"</li> <li>• 2 B2   B3 " PSU2"</li> <li>• 3 B2   B3 " PSU3"</li> <li>• 4 B3 " PSU4"</li> <li>• 5 B3 " PSU5"</li> <li>• 6 B1   B2   B3 "Sled0"</li> <li>• 7 B1   B2   B3 "Sled1"</li> <li>• 8 B2   B3 "Sled2"</li> <li>• 9 B2   B3 "Sled3"</li> <li>• 10 B2   B3 "Sled4"</li> <li>• 11 B2   B3 "Sled5"</li> <li>• 12 B3 "Sled6"</li> <li>• 13 B3 "Sled7"</li> <li>• 14 B3 "Sled8"</li> <li>• 15 B3 "Sled9"</li> <li>• 16 B2   B3 "CPCI0"</li> <li>• 17 B2   B3 "CPCI1"</li> </ul>	Critical	Sys monitor
FPGA program failed	The FPGA has failed.	Critical	Sys monitor
Unexpected error returned from smgrEventDriveInserted (index,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventDriveRemove d(index,status)	A firmware error has occurred.	Critical	Sys monitor



<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Unexpected error returned from smgrEventDriveSensorChange-QSB(index,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventDriveSensorChange-power(index,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventDriveSensorChange-power(index,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventDriveSensorChange-temp(0,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventPowerSupplySensorChange(index,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventSensorChange-QSB(0,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventSensorChange-adc(0,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventSensorChange-doors(0,status)	A firmware error has occurred.	Critical	Sys monitor

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
Unexpected error returned from smgrEventSensorChange-temp(0,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventVarries-fans(0,status)	A firmware error has occurred.	Critical	Sys monitor
MAC Address is Zero(index/index)	MAC address is not set.	Critical	Sys monitor
Drive Sled Inserted(sled/0)	Normal operation	Informational	Sys monitor
Drive Sled Removed(sled/0)	Normal operation	Informational	Sys monitor
Power Supply Inserted (supply/0)	Normal operation	Informational	Sys monitor
Power Supply Removed (supply/0)	Normal operation	Informational	Sys monitor
System Time Base Set(msecs/seconds)	Normal operation	Informational	Sys monitor
System booted(build type/version)	Normal operation	Informational	Sys monitor

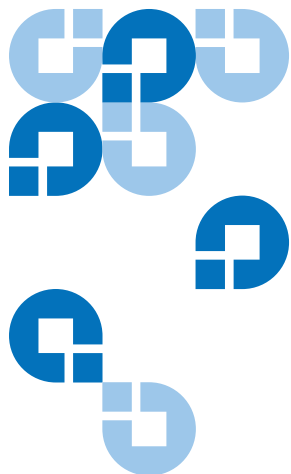
Event Detail	Event Description	Category	Reported By
Monitored power level critical(0,id) Monitored power level warning(0,id)	Power monitoring channel 0-1id Blake Units 0 B2 B3 VOLTS "3.3v cpci_A" 1 B2 B3 VOLTS "5.0v cpci_A" 2 B2 B3 VOLTS "24v cpci_A" 3 B2 B3 VOLTS "24v cpci_B" 4 B3 VOLTS "24v cpci_C" 5 B2 B3 VOLTS "3.3v cpci_B" 6 B2 B3 VOLTS "5.0v cpci_B" 7 B3 VOLTS "3.3v cpci_C" 8 B3 VOLTS "5.0v cpci_C" 9 B2 B3 VOLTS "12v cpci" 10 B1 B2 B3 AMPS "24v buss_A current" 11 B1 B2 B3 VOLTS "3.3v scb" 12 B1 B2 B3 VOLTS "2.5v scb" 13 B1 B2 B3 VOLTS "1.8v scb" 14 B1 B2 B3 VOLTS "1.2v scb" 15 B1 B2 B3 PSID "psu0 ID" 16 B1 B2 B3 PSID "psu1 ID" 17 B1 B2 B3 VOLTS "psu0 24v" 18 B1 B2 B3 VOLTS "psu1 24v" 19 B1 VOLTS "12v cpci" 20 B2 B3 VOLTS "24v scb" 21 B1 VOLTS "5.0v scb/cpci" 22 B2 B3 AMPS "24v buss_B current" 23 B2 B3 PSID "psu2 ID" 24 B2 B3 PSID "psu3 ID" 25 B2 B3 VOLTS "psu2 24v" 26 B2 B3 VOLTS "psu3 24v" 27 B2 B3 VOLTS "5.0v scb" 28 B3 AMPS "24v buss_C current" 29 B3 PSID "psu4 ID" 30 B3 PSID "psu5 ID" 31 B3 VOLTS "psu4 24v" 32 B3 VOLTS "psu5 24v"	Warning Critical	Sys monitor

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
QSB Channel Errors (channel/errors)	A QSB error has occurred.	Warning	Sys monitor
QSB Channel Failure (channel/count)	A QSB failure has occurred.	Critical	Sys monitor
QSB Channel Resyncs (channel/resyncs)	A QSB resync has occurred.	Warning	Sys monitor
RTC Failure	The real time clock has failed.	Critical	Sys monitor
RTC Time not set	The real time clock has not been set.	Informational	Sys monitor
Unknown board revision(board/Board Revision)	An unknown board revision has been detected.	Critical	Sys monitor
Wrong CPLD revision(board/CPLD Revision)	Wrong CPLD revision detected.	Critical	Sys monitor
ADC Sensor Communication Failed(channel/id)	The SPI flash has failed. <ul style="list-style-type: none"> <li>• channel 0-1id</li> <li>• 2 SPI_ID_BP_ADC_1</li> <li>• 3 SPI_ID_BP_ADC_2</li> <li>• 14 SPI_ID_BRM_ADC</li> </ul>	Critical	Sys monitor
BP is over temperature(old temp/new temp)	The backplane has experienced an over-temp condition.	Critical	Sys monitor
BRM is over temperature(old temp/new temp)	The BRM has experienced an over-temp condition.	Critical	Sys monitor
BRM1 is over temperature(old temp/new temp)	The BRM1 has experienced an over-temp condition.	Critical	Sys monitor

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
BRM2 is over temperature(old temp/ new temp)	The BRM2 has experienced an over-temp condition.	Critical	Sys monitor
BRM3 is over temperature(old temp/ new temp)	The BRM3 has experienced an over-temp condition.	Critical	Sys monitor
OCP is over temperature(old temp/ new temp)	The OCP has experienced an over-temp condition.	Critical	Sys monitor
HAND is over temperature(old temp/ new temp)	The hand has experienced an over-temp condition.	Critical	Sys monitor
SCB is over temperature(old temp/ new temp)	The system controller board has experienced an over-temp condition.	Critical	Sys monitor
SLED0 is over temperature(old temp/ new temp)	Sled 0 has experienced an over-temp condition.	Critical	Sys monitor
SLED1 is over temperature(old temp/ new temp)	Sled 1 has experienced an over-temp condition.	Critical	Sys monitor
SLED2 is over temperature(old temp/ new temp)	Sled 2 has experienced an over-temp condition.	Critical	Sys monitor
SLED3 is over temperature(old temp/ new temp)	Sled 3 has experienced an over-temp condition.	Critical	Sys monitor
SLED4 is over temperature(old temp/ new temp)	Sled 4 has experienced an over-temp condition.	Critical	Sys monitor
SLED5 is over temperature(old temp/ new temp)	Sled 5 has experienced an over-temp condition.	Critical	Sys monitor

<b>Event Detail</b>	<b>Event Description</b>	<b>Category</b>	<b>Reported By</b>
SLED6 is over temperature(old temp/ new temp)	Sled 6 has experienced an over-temp condition.	Critical	Sys monitor
SLED7 is over temperature(old temp/ new temp)	Sled 7 has experienced an over-temp condition.	Critical	Sys monitor
SLED8 is over temperature(old temp/ new temp)	Sled 8 has experienced an over-temp condition.	Critical	Sys monitor
SLED9 is over temperature(old temp/ new temp)	Sled 9 has experienced an over-temp condition.	Critical	Sys monitor

Event Detail	Event Description	Category	Reported By
Temp Sensor Communication Failed(channel/iic_id)	A temperature sensor has failed. <ul style="list-style-type: none"> <li>• channel 0-9id</li> <li>• 17 IIC_ID_TEMP_SCB</li> <li>• 18 IIC_ID_TEMP_BP</li> <li>• 19 IIC_ID_TEMP_BRM</li> <li>• 20 IIC_ID_TEMP_BRM1</li> <li>• 21 IIC_ID_TEMP_BRM2</li> <li>• 22 IIC_ID_TEMP_BRM3</li> <li>• 23 IIC_ID_TEMP_HAND</li> <li>• 24 IIC_ID_TEMP_XY</li> <li>• 25 IIC_ID_TEMP_Z</li> <li>• 26 IIC_ID_TEMP_GUI</li> <li>• 27 IIC_ID_TEMP_SLED0</li> <li>• 28 IIC_ID_TEMP_SLED1</li> <li>• 29 IIC_ID_TEMP_SLED2</li> <li>• 30 IIC_ID_TEMP_SLED3</li> <li>• 31 IIC_ID_TEMP_SLED4</li> <li>• 32 IIC_ID_TEMP_SLED5</li> <li>• 33 IIC_ID_TEMP_SLED6</li> <li>• 34 IIC_ID_TEMP_SLED7</li> <li>• 35 IIC_ID_TEMP_SLED8</li> <li>• 36 IIC_ID_TEMP_SLED9</li> </ul>	Critical	Sys monitor
XY is over temperature(old temp/new temp)	The XY axis motor has experienced an over-temp condition.	Critical	Sys monitor
Z is over temperature(old temp/new temp)	The Z axis motor has experienced an over-temp condition	Critical	Sys monitor



## Chapter 5

# Troubleshooting

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This chapter describes problems you may encounter during the setup and operation of the Quantum PX500 Series library. Corrective information is provided to help you resolve the problems.

Several of these problems produce error messages on the OCP called events (refer to [chapter 4](#)).

This chapter is divided into the following sections:

- [Common Problems and Solutions](#)
- [Interpreting System LED Status](#)

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## Common Problems and Solutions

The troubleshooting information in this section covers the following topics:

- [Start-up Problems](#)
- [OCP Problems](#)
- [Robotics \(Gripper\) Problems](#)
- [Operating Problems](#)



## Start-up Problems

[Table 31](#) describes corrective actions for problems which occur during start-up.

Table 31 Start-up Problems

Problem	Corrective Action
The library does not power on.	<ul style="list-style-type: none"> <li>• Make sure all power cords are connected to grounded electrical outlet.</li> <li>• Press the power button located on the front of the library.</li> </ul>
The library or tape drives do not respond on the SCSI bus.	Make sure each SCSI device on the same SCSI bus has a unique address and the last device is properly terminated.
During initialization, the OCP displays "ERR." in the upper right hand corner and the LED located under the buttons is amber.	<ul style="list-style-type: none"> <li>• Power the system down completely and power it back on.</li> <li>• Determine the failure type by checking any previous error codes returned to the host computer.</li> <li>• Check the event logs from the remote management pages (see <a href="#">chapter 3</a> on page 85).</li> </ul>
One or more tape drives fails to power up,	<ul style="list-style-type: none"> <li>• Power on tape drives from the OCP.</li> <li>• Remove and reinstall the tape drive.</li> </ul>
The tape drives are not visible from the host system.	<ul style="list-style-type: none"> <li>• Check all SCSI cabling and termination at the back of the library. If necessary, contact your field service representative about replacing the drives.</li> <li>• Power on tape drives from the OCP.</li> <li>• Remove and reinstall the tape drive.</li> </ul>

## OCP Problems

[Table 32](#) describes corrective actions for OCP problems.

Table 32 OCP Problems

Problem	Corrective Action
The OCP is blank.	<ul style="list-style-type: none"> <li>• Physically remove the AC power by removing all power cords from the power supply(s) and reconnect them.</li> <li>• Confirm that power is on and if the OCP is still blank, contact an authorized Quantum field service engineer (see <a href="#">“Contacts”</a> on page xix).</li> </ul>
The OCP does not respond to buttons.	<ul style="list-style-type: none"> <li>• Verify that the buttons are not stuck underneath the front bezel.</li> <li>• Physically remove the AC power by removing all power cords from the power supply(s) and reconnect them. Power the library on and if the OCP still does not respond to buttons, contact an authorized Quantum field service engineer (see <a href="#">“Contacts”</a> on page xix).</li> </ul>
An error number or event is displayed.	Write down the error number and contact an authorized Quantum field service engineer (see <a href="#">“Contacts”</a> on page xix).

## Robotics (Gripper) Problems

[Table 33](#) describes corrective actions for robotics or gripper problems.

Table 33 Robotics (Gripper)  
Problems

Problem	Corrective Action
The robot does not move at power up.	<ul style="list-style-type: none"> <li>• Make sure that all internal packing materials (foam pads and metal straps) have been removed.</li> <li>• Check the library state on the OCP or remote management pages. If Door Open is displayed, make sure the front doors are closed.</li> <li>• Physically remove the AC power by removing all power cords from the power supply(s) and reconnect them. Power the library on and if the robot still does not move, contact an authorized Quantum field service engineer (see <a href="#">“Contacts”</a> on page xix).</li> </ul>
The barcode reader cannot read the barcode and displays “no label”.	<ul style="list-style-type: none"> <li>• Verify that nothing obstructs the reader.</li> <li>• It is recommended to avoid barcode reader problems, to only use tape cartridge labels provided by manufacturer.</li> <li>• Reboot the library (see <a href="#">“Reboot Library”</a> on page 141). If the problem continues, contact an authorized Quantum field service engineer see <a href="#">“Contacts”</a> on page xix).</li> </ul>
The robot times out or fails during an operation.	<ul style="list-style-type: none"> <li>• Check that the tape cartridge involved in the operation is properly positioned in the slot or drive and ready to be picked.</li> <li>• Check that the robot is not obstructed in any way.</li> <li>• Retry the operation. If it still fails, contact a field service engineer.</li> </ul>

Problem	Corrective Action
The robot drops a cartridge.	<ul style="list-style-type: none"> <li>• Open the doors.</li> <li>• Retrieve the cartridge, orient it properly, and place the cartridge in an empty storage slot. (Do not try to place the cartridge in the gripper.)</li> <li>• Perform an inventory (see <a href="#">“Inventory Page”</a> on page 103).</li> <li>• If the operator manually places a cartridge in an empty slot, he must then run an inventory so the library records the position of the manually placed cartridge.</li> </ul>

## Operating Problems

[Table 34](#) describes the corrective action for problems which occur during library operation.

Table 34 Problems During Library Operation

Problem	Corrective Action
The host computer cannot communicate with the library.	<p>This may be a SCSI bus time-out or a premature disconnect problem.</p> <p>Check cable connections, cable length, SCSI addresses, and termination.</p> <p>Restart the host and the library ensuring that the library is “on-line” before the host is restarted.</p> <p>If the host and library still are not communicating, contact an authorized Quantum field service engineer see (<a href="#">“Contacts”</a> on page xix).</p>

<b>Problem</b>	<b>Corrective Action</b>
<p>A tape cartridge (medium) is reported not present.</p>	<p>This indicates that the gripper could not sense a tape cartridge in a particular storage slot even though the inventory reports that it is present.</p> <p>The system performs optimally when tape cartridge labels are present.</p> <p>Check to see if the designated cartridge is present. If it is, make sure it is properly seated. (For a tape drive, make sure the cartridge is completely unloaded.) Then retry the command.</p> <p>If the error persists, contact an authorized Quantum field service engineer see ("<a href="#">Contacts</a>" on page xix).</p>
<p>A move command failed.</p>	<p>Check the source and destination slots. The source slot should hold the cartridge to be moved; the destination slot should be empty.</p> <p>Make sure the gripper is empty and all actuators are free of obstruction.</p> <p>Retry the command.</p> <p>Reboot the library (see "<a href="#">Reboot Library</a>" on page 141). If the problem continues, contact an authorized Quantum field service engineer see "<a href="#">Contacts</a>" on page xix).</p>
<p>A flash memory error is reported.</p>	<p>Contact an authorized Quantum field service engineer.</p>
<p>A maximum temperature exceeded warning is displayed.</p>	<p>Turn off the library and allow it to cool down. Lower the room temperature, if possible, and increase ventilation around the library.</p> <p>(If the operating temperature is too high, the library will automatically shut down until the temperature drops.)</p>

## Interpreting System LED Status

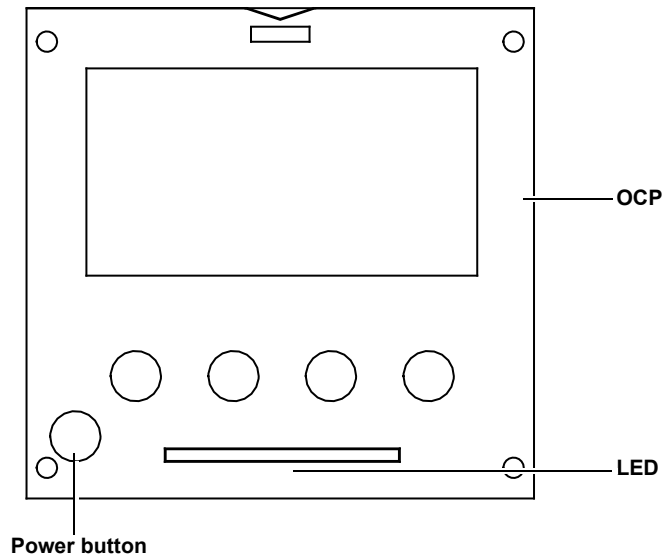
The following system LED status indicators are available on the PX500 series libraries:

- [Operator Control Panel \(OCP\) LED Status](#)
- [System Controller Board \(SCB\) LED Status](#)
- [Power Supply LED Status](#)
- [Tape Drive LED Status](#)

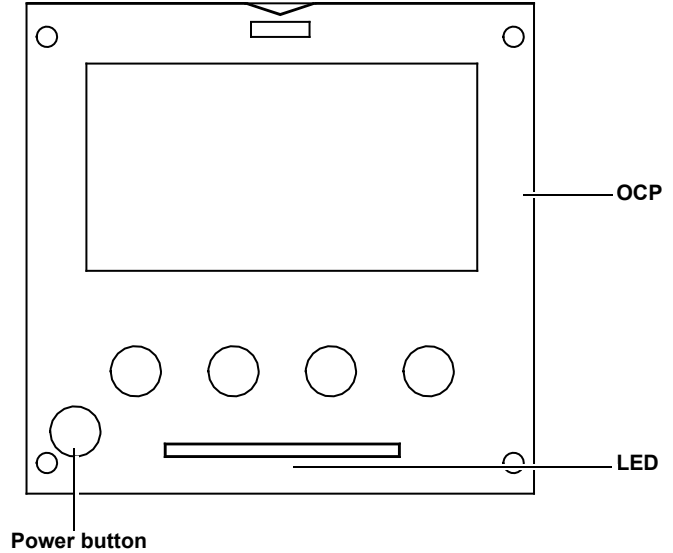
### Operator Control Panel (OCP) LED Status

Table 35 OCP LED States

The OCP has an LED indicator reporting the library state (see [table 35](#)).



LED Status	Problem/Status
Green solid	The library is in an idle state.
Green flashing	The library is busy.

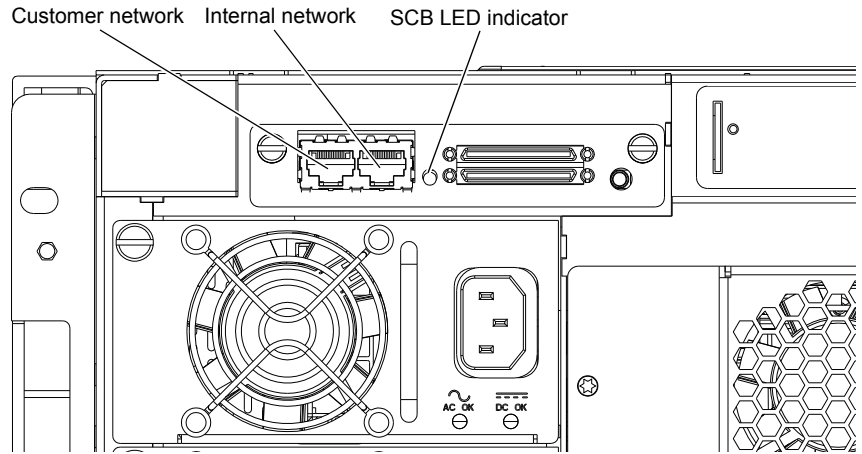


LED Status	Problem/Status
Amber flashing	The library is in an attention state.
Amber solid	An error has occurred on the library.

### System Controller Board (SCB) LED Status

The SCB contains LED indicators that reports the state of the SCB and Fibre Channel port (see [table 36](#) and [table 37](#)).

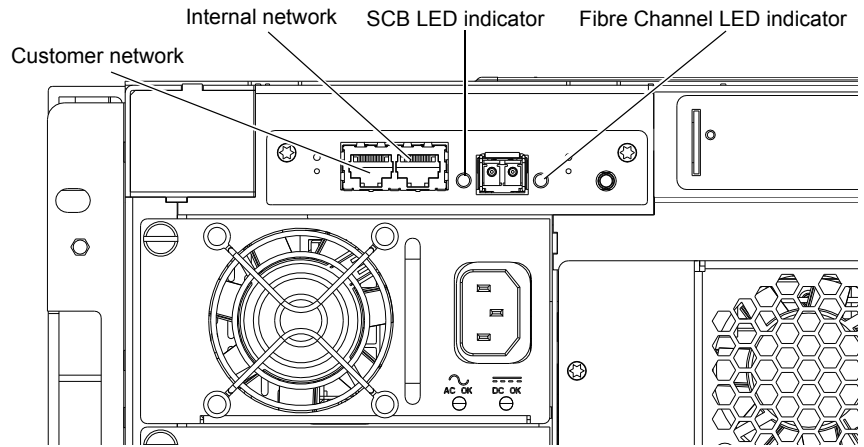
Table 36 SCSI SCB LED



LED Status	Problem/Status
SCB LED Flashing	SCB good. Communicating.
SCB LED solid	<ul style="list-style-type: none"> <li>• System busy.</li> <li>• If the LED is solid for more than two minutes and the library has been initialized, contact an authorized Quantum field service engineer see ("<a href="#">Contacts</a>" on page xix).</li> </ul>
SCB LED Off	<ul style="list-style-type: none"> <li>• System idle.</li> <li>• If the LED is off for more than two minutes and the library has been initialized, contact an authorized Quantum field service engineer see ("<a href="#">Contacts</a>" on page xix).</li> </ul>



Table 37 Fibre Channel SCB LED

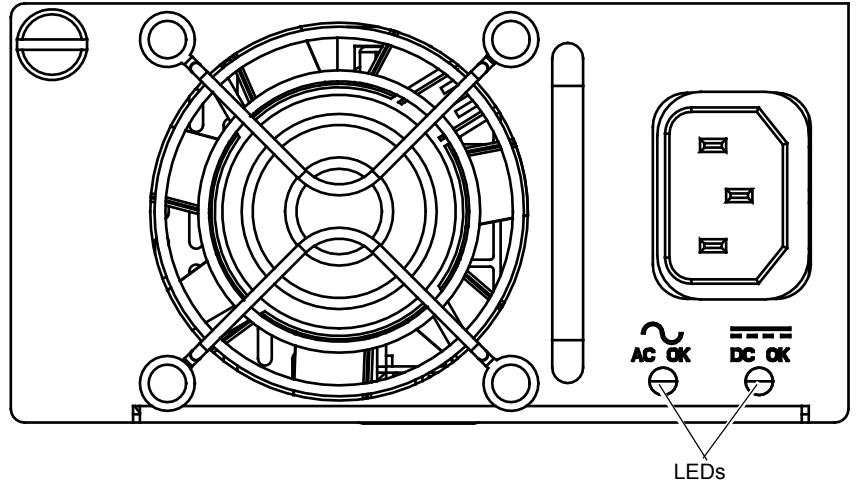


LED Status	Problem/Status
SCB LED Flashing	SCB good. Communicating.
SCB LED solid	<ul style="list-style-type: none"> <li>• System busy.</li> <li>• If the LED is solid for more than two minutes and the library has been initialized, contact an authorized Quantum field service engineer see ("<a href="#">Contacts</a>" on page xix).</li> </ul>
SCB LED Off	<ul style="list-style-type: none"> <li>• System idle.</li> <li>• If the LED is off for more than two minutes and the library has been initialized, contact an authorized Quantum field service engineer see ("<a href="#">Contacts</a>" on page xix).</li> </ul>
Fibre Channel LED solid	<ul style="list-style-type: none"> <li>• Fibre Channel port has a good link.</li> </ul>
Fibre Channel LED Off	<ul style="list-style-type: none"> <li>• Fibre Channel port is unplugged or does not have a good link.</li> </ul>

## Power Supply LED Status

The power supplies have an LED indicator reporting the power supply state (see [table 38](#)).

Table 38 Power Supply LEDs

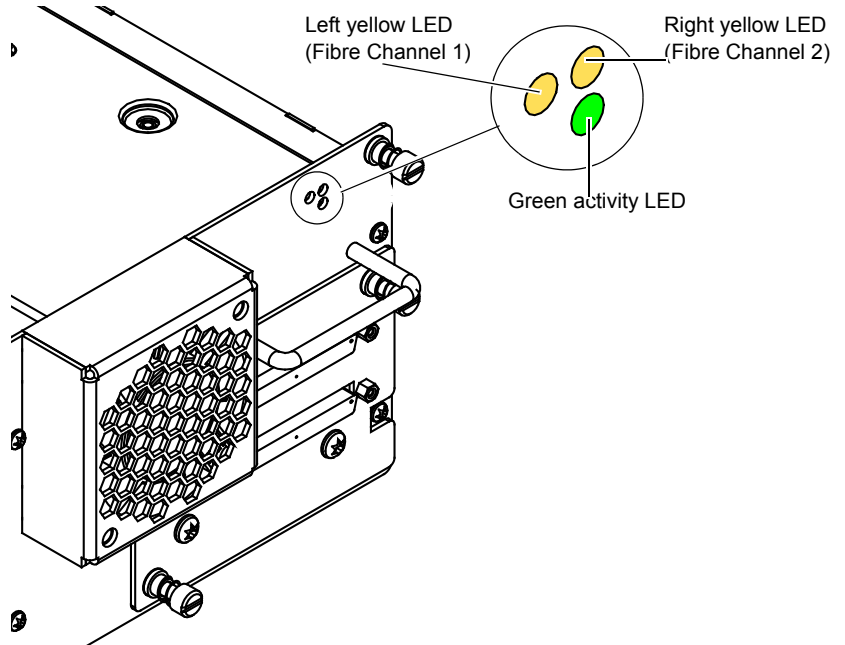


LED Status	Problem/Status
AC OK solid green	Power has been applied to the power supply and is within specifications.
AC OK off	The power supply is not attached to a power source or the power source has failed.
DC OK solid green	The power supply is providing DC power to the library normally.
DC OK off	The power supply has failed.

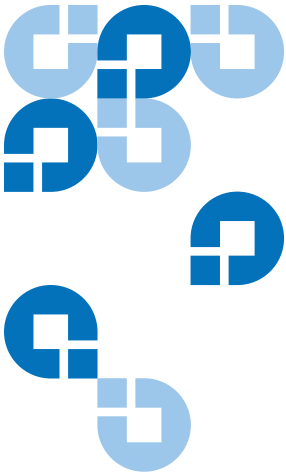
## Tape Drive LED Status

The tape drive canisters have LED indicators reporting the tape drive state (see [table 39](#)).

Table 39 Tape Drive LEDs



LED Status	Problem/Status
Green flashing	Drive good. Communicating.
Green solid	Drive failed
Off	No power to drive.
Left yellow on	Fibre Channel port active.
Right yellow on	Fibre Channel port active.



## Appendix A Specifications

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This appendix lists the following specifications for the PX500 Series libraries:

- [Physical Specifications](#)
- [Performance Specifications](#)
- [Reliability Specifications](#)
- [Tape Drive Specifications](#)
- [Environmental Specifications](#)
- [SCSI Specifications](#)

## Physical Specifications

Table 40 Unit Dimensions/  
Weight

	<b>PX502</b>	<b>PX506</b>	<b>PX510</b>
<b>Width</b>	19 in. (482 mm)	19 in. (482 mm)	19 in. (482 mm)
<b>Depth</b>	31 in. (762 mm.)	31 in. (762 mm.)	31 in. (762 mm)
<b>Height</b>	6.75 in. (171 mm)	17.25 in. (438 mm)	31.25 in. (794 mm)
<b>Weight</b>	87 lbs. (39 kg) with 2 drives, 2 magazines, and 0 cartridges installed	202 lbs. (92 kg) with 6 drives, 4 magazines, and 0 cartridges installed	334 lbs. (152 kg) with 10 drives, 10 magazines, and 0 cartridges installed.

Table 41 Capacities

	<b>PX502</b>	<b>PX506</b>	<b>PX510</b>
<b>Number of Tape Drives</b>	Up to 2	Up to 6	Up to 10
<b>Type of Tape Drives</b>	DLT-S4 (SCSI and nFC) SDLT 600(SCSI and nFC), HP LTO Gen 2, or HP LTO Gen 3 (SCSI and nFC)		
<b>Number of Tape Cartridges</b>	Up to 32 SDLT tape cartridges  Up to 38 LTO cartridges	Up to 88 SDLT tape cartridges  Up to 100 LTO tape cartridges	Up to 171 SDLT tape cartridges  Up to 201 LTO tape cartridges
<b>Type of Tape Cartridges</b>	For use with: <ul style="list-style-type: none"> <li>• DLT-S4 drives: DLT-S4 media</li> <li>• SDLT 600 drives: Super DLTtape I* or Super DLTtape II</li> <li>• HP LTO Gen drives: LTO-2 and LTO-3 Ultrium cartridges*</li> </ul>		

	<b>PX502</b>	<b>PX506</b>	<b>PX510</b>
<b>Number of Magazines</b>	Up to 2	Up to 4	Up to 10
<b>Magazine Capacity</b>	Each magazine holds up to 15 SDLT tape cartridges or up to 18 LTO tape cartridges		
<b>Manual Access Facility</b>	Yes	Yes	Yes
<b>Robot Mounted Bar Code Reader</b>	Yes	Yes	Yes
<b>Scalability</b>	Yes	Yes	Yes

\* LTO-2 Ultrium cartridges are recommended. Although HP LTO Gen 2 tape drives recognize both LTO and LTO-2 Ultrium cartridges, only LTO-2 cartridges utilize the full capacity of these drives.

## Performance Specifications

Table 42 Performance Specifications

	PX502	PX506	PX510
<b>Average Swap Time</b>	Less than 14 seconds	Less than 17 seconds	Less than 20 seconds

Table 43 Library Performance

	Tape Drive	Data Capacity (Excluding Fixed Slots)*	Maximum Data Capacity (Including Fixed Slots)*	Maximum Data Throughput*	Host Interfaces
PX502 (2 drives)	DLT-S4	48 TB	51.2 TB	864 GB/hr	Ultra 320 SCSI
	SDLT 600	18 TB	19.2 TB	518 GB/hr	Ultra160 SCSI
	HP LTO Gen 2	7.2 TB	7.6 TB	432 GB/hr	LVD Ultra 2 SCSI
	HP LTO Gen 3	28.8 TB	30.4 TB	1.1 TB/hr	LVD Ultra 3 SCSI
PX506 (6 drives)	DLT-S4	96 TB	140.8 TB	2.6 TB/hr	Ultra 320 SCSI
	SDLT 600	36 TB	52.8 TB	1.6 TB/hr	Ultra160 SCSI
	HP LTO Gen 2	28.8 TB	40 TB	1.3 TB/hr	LVD Ultra 2 SCSI
	HP LTO Gen 3	57.6 TB	80 TB	3.4 TB/hr	LVD Ultra 3 SCSI

	Tape Drive	Data Capacity (Excluding Fixed Slots)*	Maximum Data Capacity (Including Fixed Slots)*	Maximum Data Throughput*	Host Interfaces
PX510 (10 drives)	DLT-S4	240 TB	273.6 TB	4.4 TB/hr	Ultra 320 SCSI
	SDLT 600	90	102	2.6 TB/hr	Ultra160 SCSI
	HP LTO Gen 2	72 TB	80 TB	2.2 TB/hr	LVD Ultra 2 SCSI
	HP LTO Gen 3	144 TB	160 TB	5.7 TB/hr	LVD Ultra 3 SCSI

\* Assuming 2:1 compression ratios

## Reliability Specifications

Table 44 Reliability Specifications

<b>MSBF</b>	PX502 and PX506 = 1,000,000 swaps PX510 = 2,000,000 swaps
<b>MTTR</b>	Less than 20 minutes



## Tape Drive Specifications

Table 45 Tape Drive Specifications

Drive Type	Native Mode		With 2:1 Compression	
	Transfer Rate	Capacity	Transfer Rate	Capacity
DLT-S4	3600 MB/min	800 GB	7200 MB/min	1600 GB
SDLT 600	2160 MB/min.	300 GB	4320 MB/min.	600 GB
HP LTO Gen 2	1800 MB/min.	200 GB	3600 MB/min.	400 GB
HP LTO Gen 3	4800 MB/min.	400 GB.	9600 MB/min.	800 GB

## Environmental Specifications

Table 46 Power

		PX502	PX506	PX510
Electrical Input Tolerances	Voltage	90-264 VAC, 47-63 Hz		
	Power	300W (average)	600W (average) (6 drives fitted)	900W (average) (10 drives fitted)

Table 47 Climate

	Temperature (Operating)	Temperature (Non-Operating)
Temperature	+50°F to 95°F (+10°C to +35°C)	-40°F to +149°F (-40°C to +65°C)

	<b>Temperature (Operating)</b>	<b>Temperature (Non-Operating)</b>
<b>Humidity</b>	20% to 80% non-condensing	10% to 90% non-condensing
<b>Altitude</b>	-500 to +10,000 feet (-152 to +3,048 meters)	-500 to +40,000 feet (-152 to +12,192 meters)

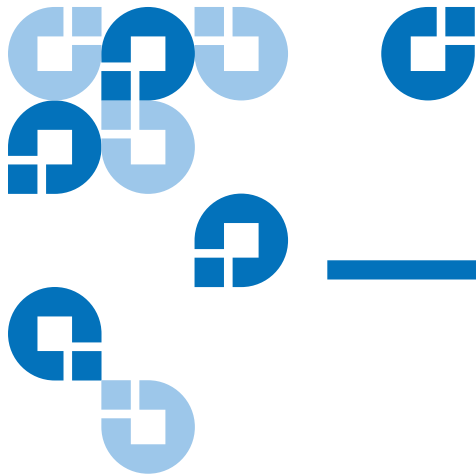
## Noise Levels

The work area noise generated by the library amounts to 57.4 dB(A).

**Deutsch:** Die arbeitsplatzbezogene Geräuschemission des Gerätes beträgt 57.dB(A).

## SCSI Specifications

LVD SCSI configurations have a maximum allowable bus length of 12 meters (39 feet). To determine the cable length of the bus, measure the lengths of the SCSI cables connecting each device to that bus and add those lengths together. To that total length, add 12.25 inches (31.10 cm) for the internal SCSI cable length of each SCSI tape drive.



## Appendix B

# SDLTtape Cartridge Maintenance

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This appendix provides guidelines for handling SDLT cartridges and visually inspecting cartridges if necessary.

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## Handling DLTtape Cartridges

- Always keep each tape cartridge in its protective plastic case when it is not in the library.
- When carrying tape cartridges in their cases, always orient the cases so that the grooves in the cases interlock. This prevents the cases from slipping apart and falling.
- Never stack more than five cartridges on top of each other.
- Always observe the proper environmental conditions for the storage of tape cartridges. Refer to the cartridge reference card supplied with each cartridge.
- When placing tape cartridges in archival storage, make sure you stand each tape cartridge vertically.
- Avoid placing tape cartridges near any sources of high intensity magnetic fields, such as computer monitors or electric motors.

- Never apply adhesive labels or POST-IT notes to the top, side, or bottom of your DLTtape cartridge. Only use the user slide-in type label provided with each cartridge and slide it over the label slot on the cartridge.
- Do not carry cartridges loosely in a box or any other container. Allowing cartridges to bang together exposes them to unnecessary physical shock.
- Do not touch or allow direct contact with tape or tape leader. Dust or natural skin oils can contaminate the tape and impact tape performance.
- Do not expose the tape cartridge to moisture or direct sunlight.
- Do not insert a dropped or damaged cartridge into a DLTtape drive without, at the very least, a thorough visual inspection (see [Visual Inspection of DLTtape Cartridges](#)). A dropped cartridge may have dislodged, loosened, or damaged internal components.

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## Visual Inspection of DLTtape Cartridges

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### When To Visually Inspect a DLTtape Cartridge

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It is important to visually inspect a DLTtape cartridge under the following circumstances:

- Whenever you change or load a new tape cartridge
- If the tape cartridge has been dropped or subjected to a physical shock
- If a DLTtape drive becomes inoperable after loading the tape cartridge
- If you receive a shipment of tape cartridges that shows any sign of being damaged

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### Visual Inspection Procedure

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To visually inspect a DLTtape cartridge:

- 1 Check the cartridge for any obvious cracks or other physical damage.

- 2 Gently shake the tape cartridge. Listen for any rattling of loose pieces inside the cartridge.

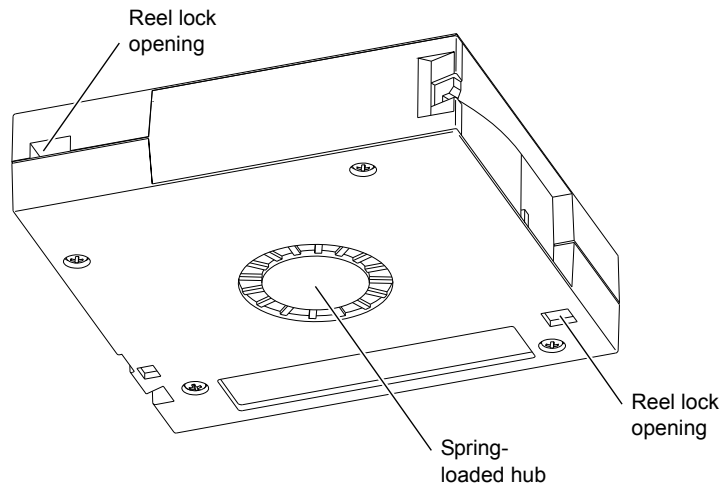
**Caution:** If you hear anything loose inside the cartridge, do not use the cartridge.

- 3 Locate the reel lock openings (see [figure 102](#)) and verify that you can see the reel locks.

The reel locks are small plastic tabs near the center of the reel lock openings. They can be broken if the cartridge is dropped.

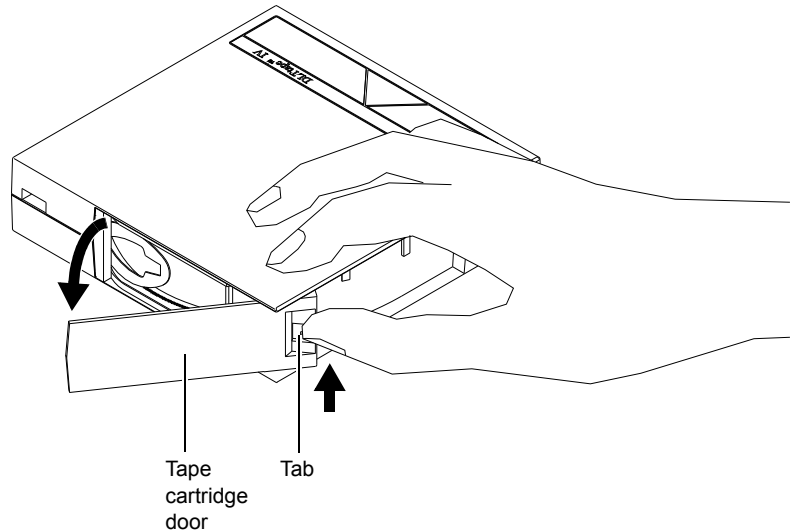
**Caution:** If the reel locks are not visible, do not use the cartridge.

Figure 102 Location of the Reel Locks and the Hub



- 4 Verify that the spring-loaded hub (see [figure 102](#)) is centered within the circular opening in the tape cartridge.
- 5 Gently press the hub, then release it. Make sure the hub springs back into place and is still centered within its circular opening.
- 6 Open the tape cartridge door (see [figure 103](#)):
  - a Gently press up on the tab at the right side of the tape cartridge door.
  - b Swing the door open.

Figure 103 Opening the Tape Cartridge Door



7 Verify that:

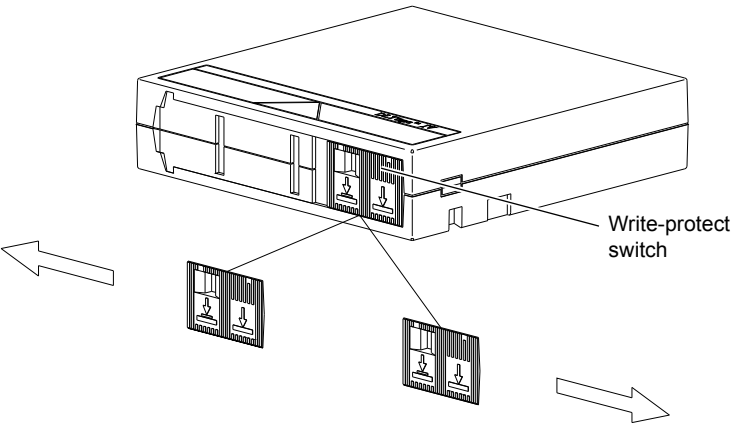
- The tape is wound tightly on the reel
- The tape leader loop is sticking up about an eighth of an inch
- The tape leader loop is not bent or torn

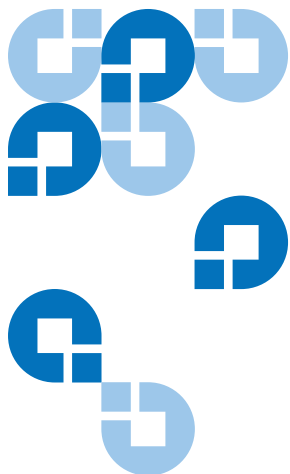
**Caution:** If any of the above conditions are not met, do not use the cartridge.

8 Check for proper operation of the tape cartridge's write-protect switch (see [figure 104](#)).

The switch should snap back and forth, and the orange tab should be visible when the switch is in the write-protected position.

Figure 104 Write Protect  
Switch





# Installing the PX502 Library

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This appendix explains how to install the Quantum PX502 Series library.

**Caution:** Quantum highly recommends that a Quantum authorized service representative relocate and install a Quantum PX506 or PX510 library to another location.

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## Selecting an Installation Location

When choosing an installation site for the PX502 library, consider the following requirements:

- [Rack Space Requirements](#)
- [Environmental Conditions](#)

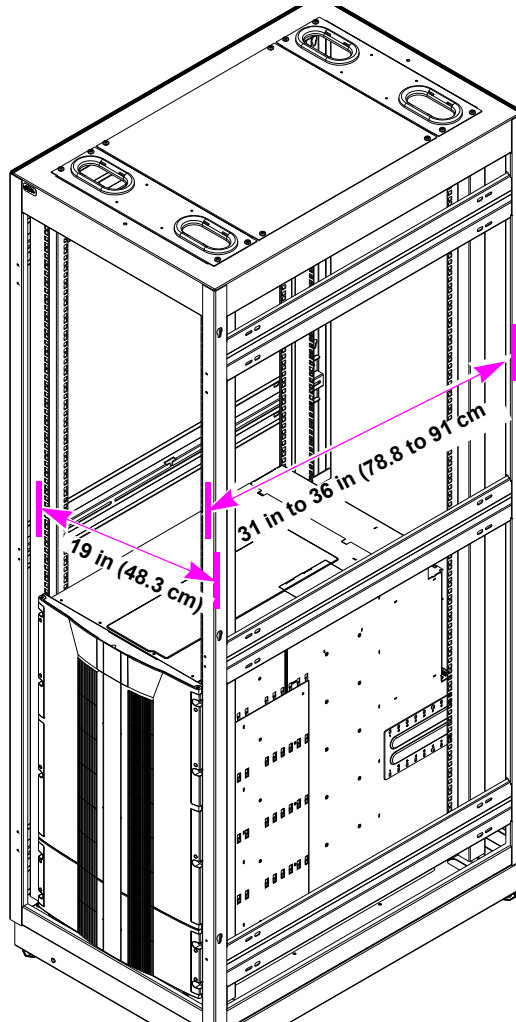


## Rack Space Requirements

Figure 105 shows the minimum rack space required by the PX502 library.

- Depth - 31 in (76.2 cm)
- Width - 19 in (48.3 cm)
- Height - 6.75 in (17 cm)
- Weight - 52 lbs (23.6 kg)
- Clearance behind library - 4 in (10 cm) behind unit for proper air flow

Figure 105 Rack Space Requirements



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## Environmental Conditions

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Refer to [appendix A](#) on page 189 for environmental condition information.

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# Preparing for the Installation

Before you begin the installation procedure in this section, make the following preparations as described in this section:

- [Providing Necessary Tools and Equipment](#)
- [Taking ESD Precautions](#)

---

## Providing Necessary Tools and Equipment

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Provide the following tools for installing the PX502 library:

- 3 mm Allen wrench
- 2.5 mm Allen wrench
- #1 flat blade screwdriver
- Antistatic wrist strap included in accessory kit

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## Taking ESD Precautions

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Some components within the PX502 library contains static-sensitive parts. To avoid damaging these parts while performing installation procedures, always observe the following precautions:

- Keep the library turned off during all installation procedures.
- Use an antistatic wrist strap (included in the accessory kit).
- Keep static-sensitive parts in their original shipping containers until ready for installation.
- Do not place static-sensitive parts on a metal surface. Place them inside their protective shipping bag or on an antistatic mat.

- Avoid touching connectors and other components.

**Note:** Dry climates and cold-weather heating environments have lower relative humidity and are more likely to produce static electricity.

## Installing the Library

Installing a PX502 library in a rack consists of the following steps:

- [Locating the Mounting Position](#)
- [Installing the Library](#)
- [Loading the Tape Cartridges](#)
- [Initial Configuration](#)

### Locating the Mounting Position

The PX502 library is designed to fit in a standard 19 inch wide rack.

It is important to the library installation to locate the hole pattern in the rack rails (see [figure 49](#)). The library must be installed at the beginning of the hole pattern. Refer to [table 48](#) for information on common rack hole types.

Table 48 Rack Hole Types

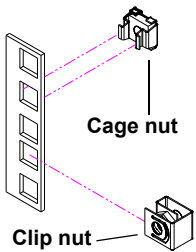
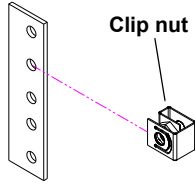
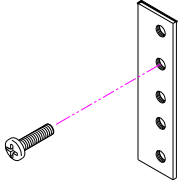
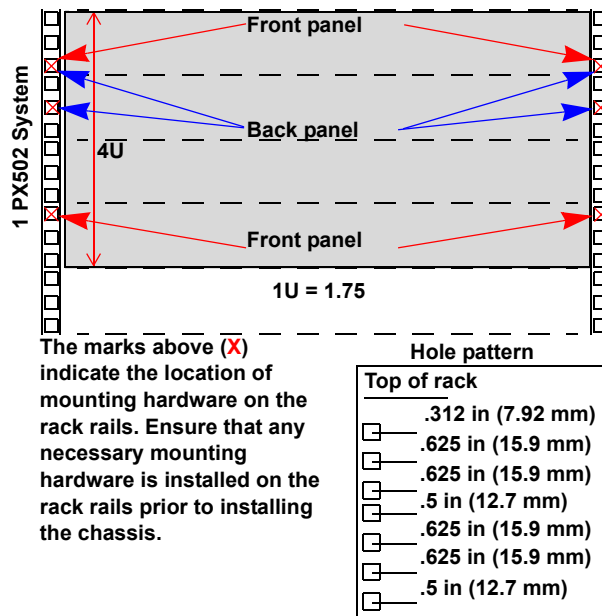
Figure	Description
	<p>Square rack holes are the most common type of rack holes. They can accept either cage nuts which mount from the back of the rail or clip nuts which clip on from the side of the rack rail.</p>

Figure	Description
	<p>Through holes require clip nuts to accept mounting hardware.</p>
	<p>Threaded holes require neither cage or clip nuts to accept mounting hardware.</p>

**Note:** The rails within the rack have a hole pattern that repeats throughout the rail. X marks the screw positions. Install nut clips (included in the accessory kit) on the rails if necessary.

Table 49 PX502 Rail Hole Patterns and Mounting Positions



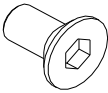
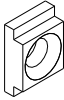
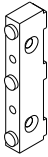
**Warning:** If the rack is empty at the time of installation, do NOT install the PX502 library too high in the rack. The weight of the library may cause the rack to become “top heavy” and unstable if installed in the top of an empty rack. Begin installing the PX502 library from the bottom of the rack if more than one library is installed in the rack.

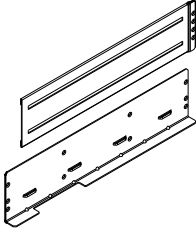
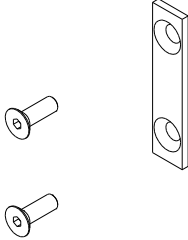
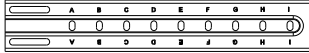
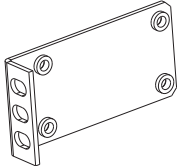
## Installing the Library

Installing the PX502 library consists of the following steps:

- [Installing the Rack Mount Shelves](#)
- [Installing the Library Chassis](#)
- [Cabling the Library](#)

Table 50 Library Mounting Hardware

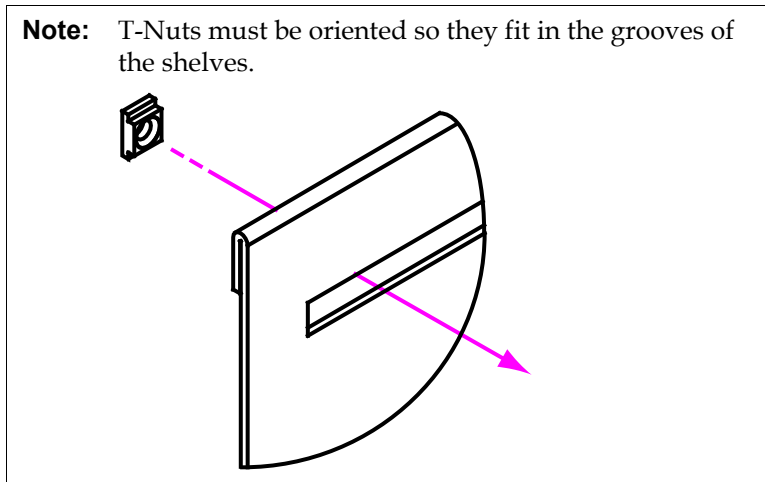
Qty	Figure	Description
16		Allen head screws (M5 x 10) for shelf assembly
8		T- nuts (M5)
4 metric and 4 standard		Rail adapters (both metric and standard holes are included, 8 total adapters)

Qty	Figure	Description
2		Right and left support shelves (left shown)
4 sets		Front and back rail mounting hardware(M5 x 12 allen screws and mounting plates)
2 sets		Back bracket hardware (M5 x 8 allen screws and mounting plate)
2 sets		Back clamp hardware (M5 x 10 and back clamp)

### Installing the Rack Mount Shelves

- 1 Assemble the rack mount shelves by (see [figure 107](#)):

- a Loosely attach the adjustable shelves (right and left) with 4 M5 x 10 Allen screws and T-nuts.



- b Attach the appropriate rail adapter to the front and back of the rack mount shelves (right and left) with 4 M5 x 10 Allen screws (each rail adapter is marked with the specific hole type supported, either metric or standard). The rail adapters have arrows indicating the proper orientation (see [figure 106](#)).

Figure 106 Rail Adapter Orientation

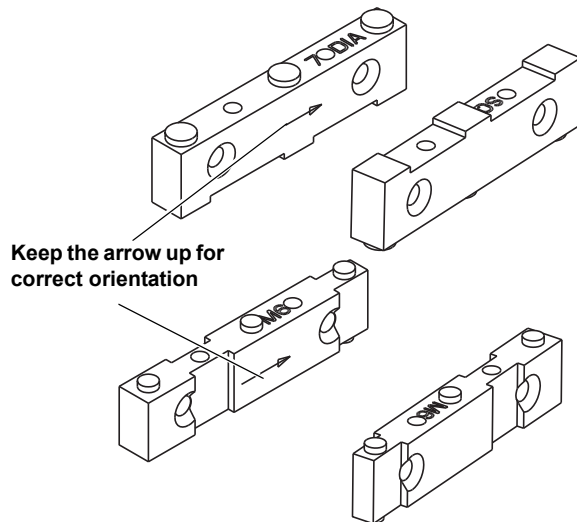


Figure 107 Assembling the  
Left-Hand Rack Mount Shelves

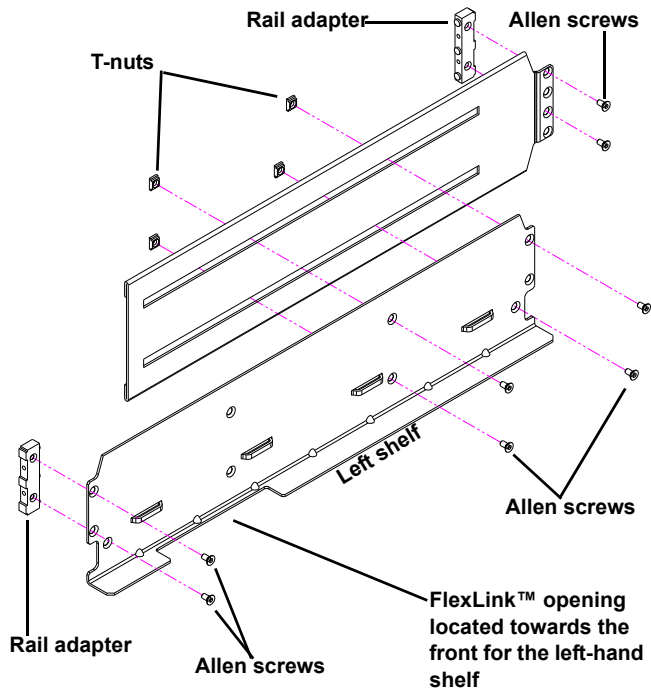
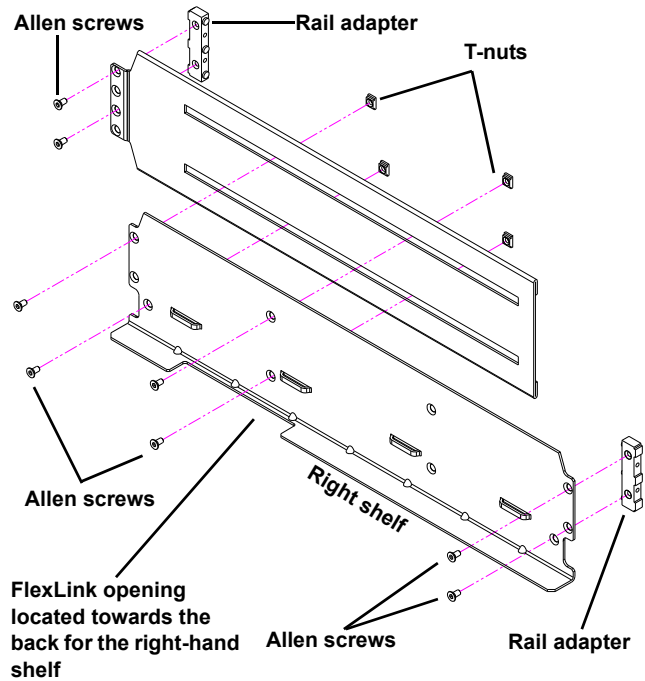




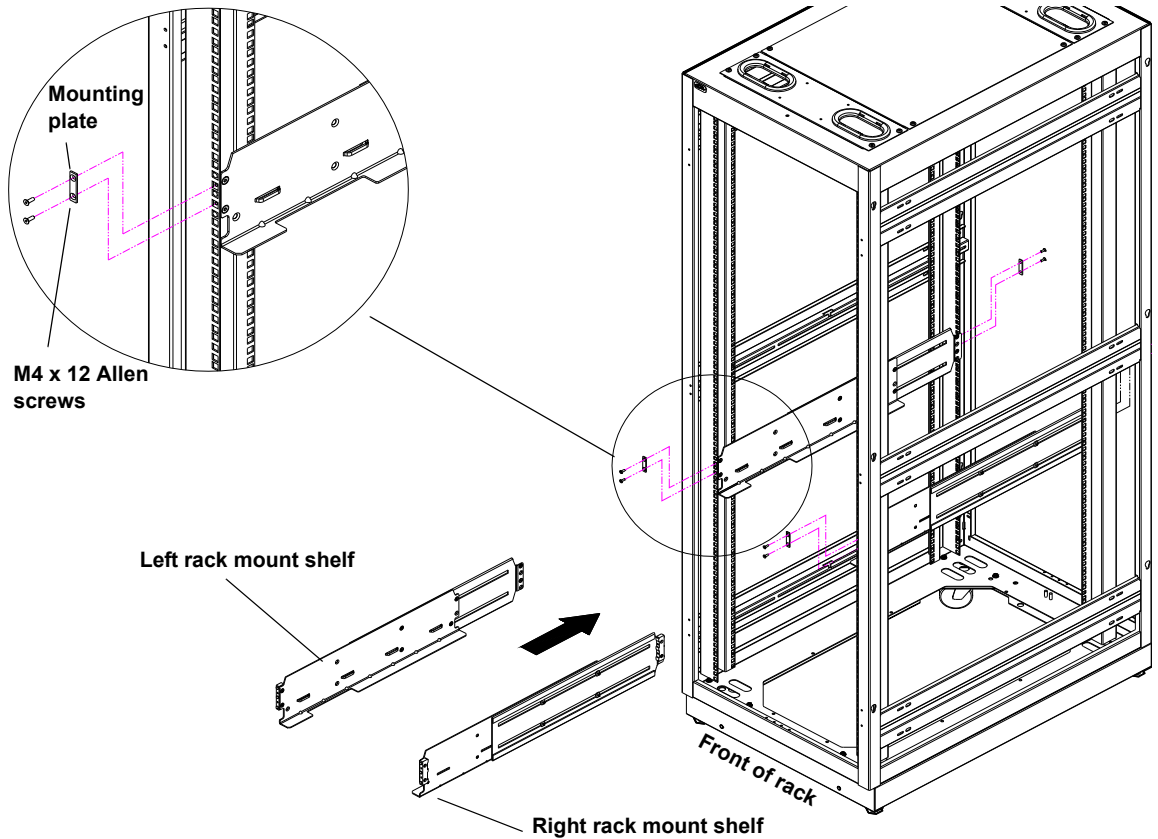
Figure 108 Assembling the  
Right-Hand Rack Mount  
Shelves



- 2 Install the left and right rack mount shelves into the rack (the rack mount shelves adjust 27 in. to 36 in.) and secure with a mounting plate and 2 M4 x 12 Allen screws at the front and back of the rack (see [figure 109](#)).

**Note:** The rack mount shelves must be installed on the inside rack rails.

Figure 109 Installing the Rack Mount Shelves



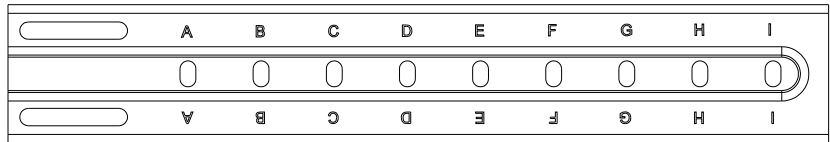
- 3 Once the rack mount shelves are secured to the rack, tighten the Allen screws securing the adjustable shelves together.

## Installing the Library Chassis

**Warning:** The PX502 weighs approximately 65 lbs (29 kg) without power supplies or tape drives. At least two people are required to lift and install either library.

- 1 The back mounting brackets are lettered (A through I) so the correct mounting position is easily determined. The mounting positions differ depending on the depth of the rack (see [table 51](#)).

Table 51 Back Mounting Bracket Orientation

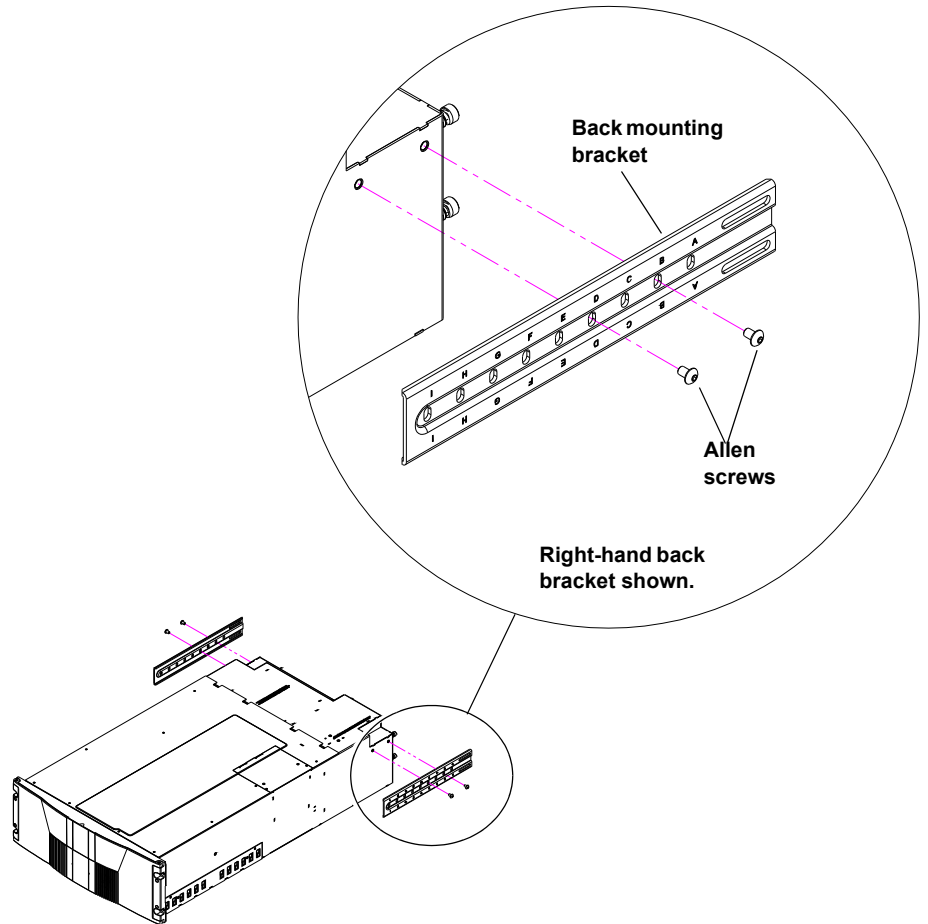


Rack Depth	Mounting Position
>27 to 28 in.	Use holes A and C
>28 to 29 in.	Use holes B and D
>29 to 30 in.	Use holes A and C
>30 to 31 in.	Use holes B and D
>31 to 32 in.	Use holes C and E
>32 to 33 in.	Use holes D and F
>33 to 34 in.	Use holes E and G
>34 to 35 in.	Use holes F and H
>35 to 36 in.	Use holes G and I

Once the location is determined, attach the back brackets to each side of the library with four M5 x 8 Allen screws (see [figure 110](#))

**Note:** Use the shortest depth number. For example, if the measurement is 34 in., use holes E and G.

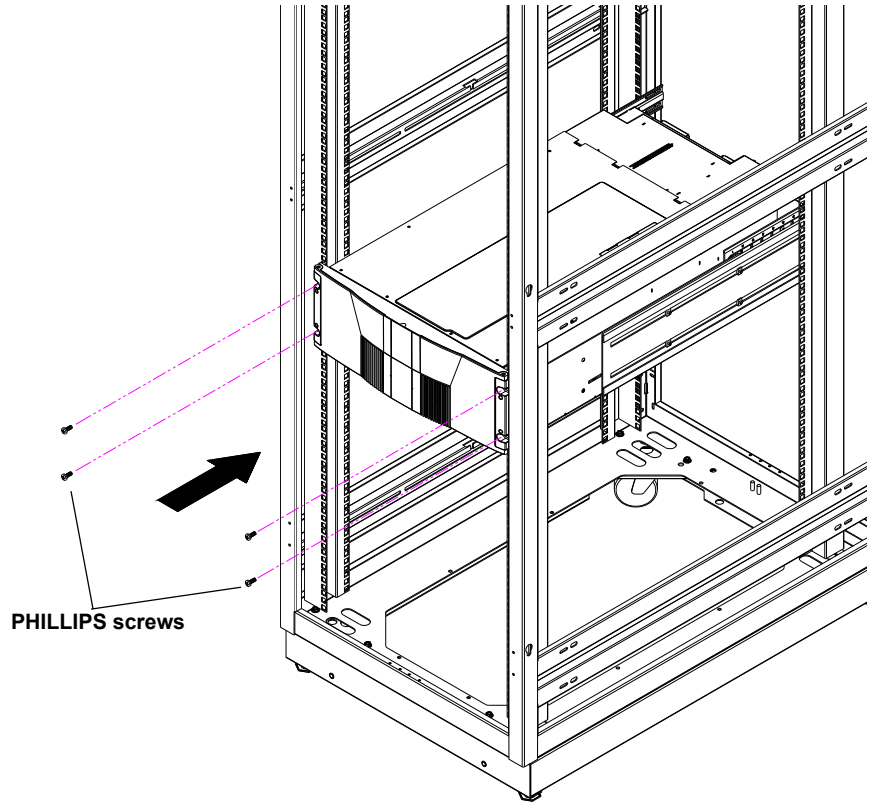
Figure 110 Back Mounting  
Brackets



- 2 Install the library into the rack as shown (see [figure 110](#)).

**Warning:** The PX502 weighs approximately 65 lbs (29 kg) without power supplies or tape drives. At least two people are required to lift and install either library.

Figure 111 Installing the PX502  
in the Rack

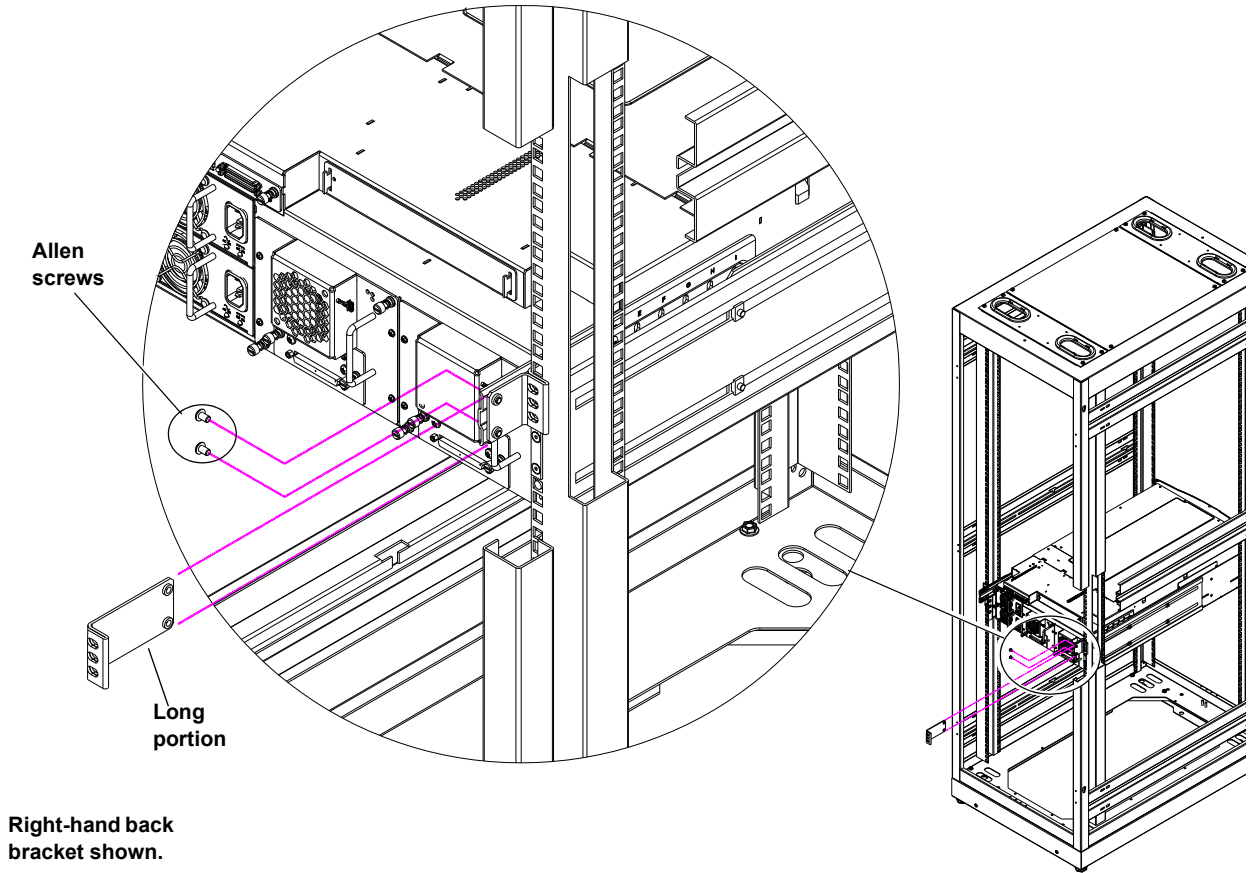


- 3 Secure the back of the library to the rack with two mounting clamps and two Allen screws on each clamp. The mounting clamps are oriented differently depending on the depth of the rack (see [figure 112](#)).

**Note:** If the rack depth is 27 to 30 in., the long portion of the clamp is mounted to the back. If the rack depth is 30 to 36 in., the long portion is mounted to the front.

- 4 Secure the mounting clamps to the rack rails with two PHILLIPS screws on each side (see [figure 112](#)).

Figure 112 Securing the Back of the Library



**Warning: Hazardous Moving Parts.**  
Keep Fingers and Other Body  
Parts Away When Removing  
and Installing Tape  
Drives.

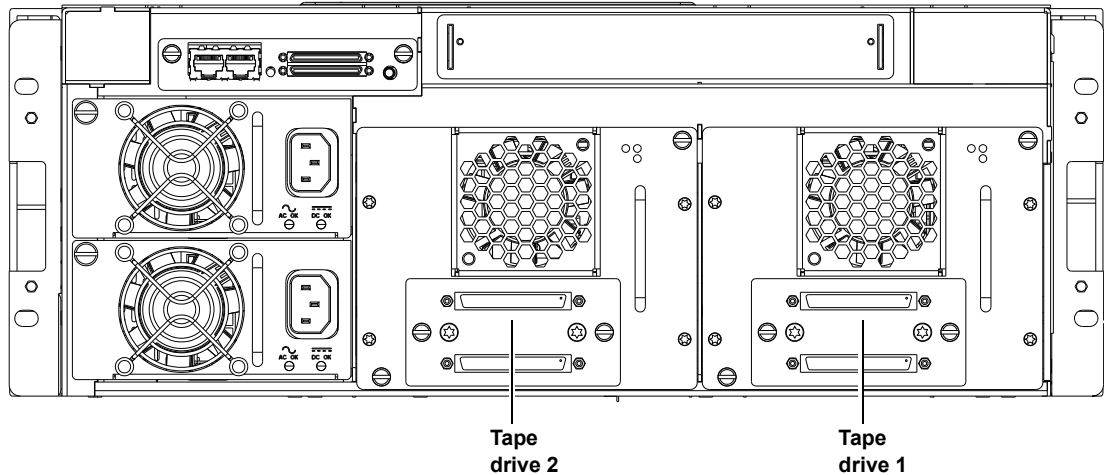


**Warnung: Gefährliche bewegliche  
Teile.** Halten Sie die  
Finger und andere  
Körperteile weg, wenn  
Sie Bandlaufwerke  
entfernen und  
anbringen.

5 To install the tape drives into the library:

- a Insert the tape drive into the drive bay slowly until the connectors are seated (see [figure 113](#)).

Figure 113 PX502 Tape Drive  
Numbering



- b Tighten the tape drive captive screws using a flat blade screwdriver.
- c Repeat these steps to install another tape drive in a different location, if desired.

The library chassis is installed in the rack.

### Cabling the Library

Connect the SCSI cables and jumpers as shown in the following figure:

- [Figure 114](#) SCSI System Controller Board
- [Figure 115](#) Surrogate SCSI System Controller Board
- [Figure 116](#) Fibre Channel System Controller Board
- [Figure 117](#) PX502 Stacked Configuration

- [Figure 116](#) Native Fibre Channel System Controller Board

**Note:** Quantum ships sufficient SCSI cables and terminators with the libraries to set up two-drives per SCSI bus. One tape drive per SCSI bus may be necessary for optimum performance. Refer to your tape drive documentation.

**Note:** SCSI cable lengths should not exceed 39.37 feet (12 meters) between the host and the library for single drive per bus installations.

Figure 114 PX502 Cabling Configuration

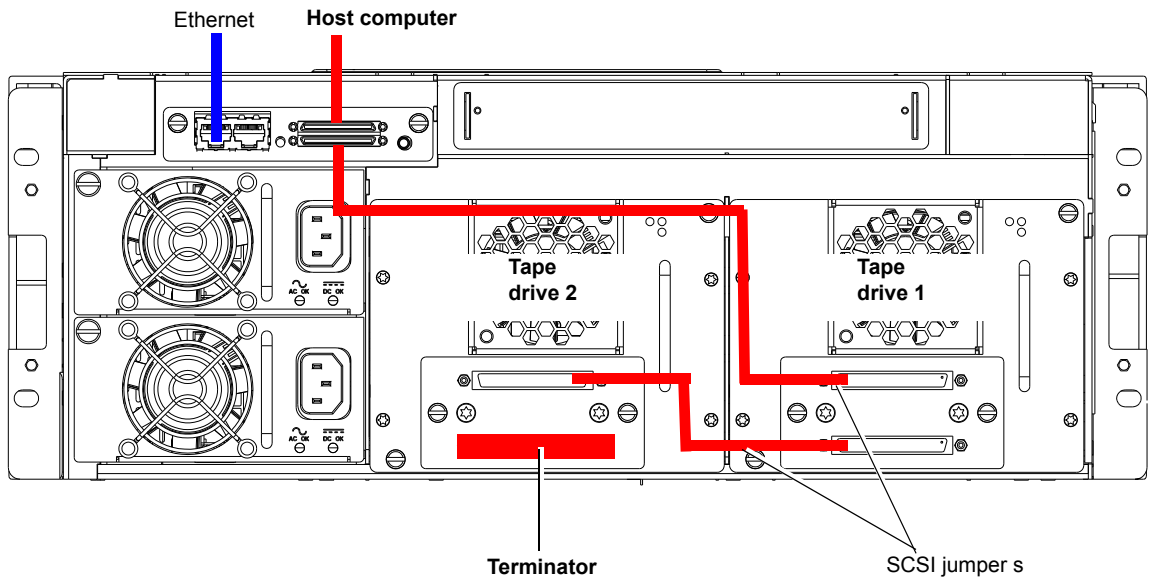
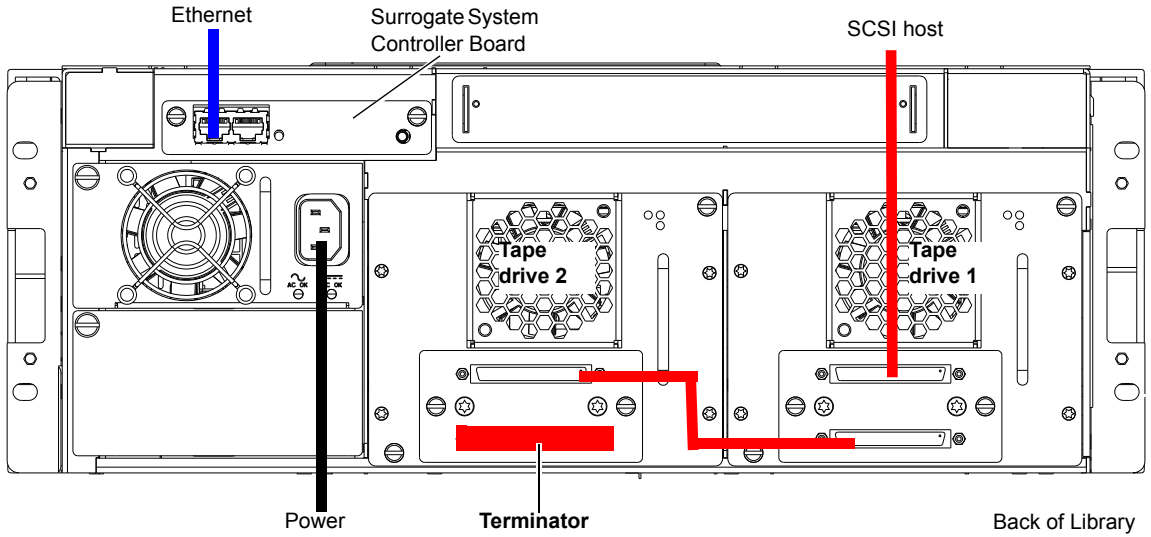




Figure 115 PX502 Cable Configuration (Surrogate)



**Note:** When operating in surrogate mode, the SCSI host connection must be made to tape drive 1.

Figure 116 PX502 Cable  
Configuration (Native Fibre  
Channel)

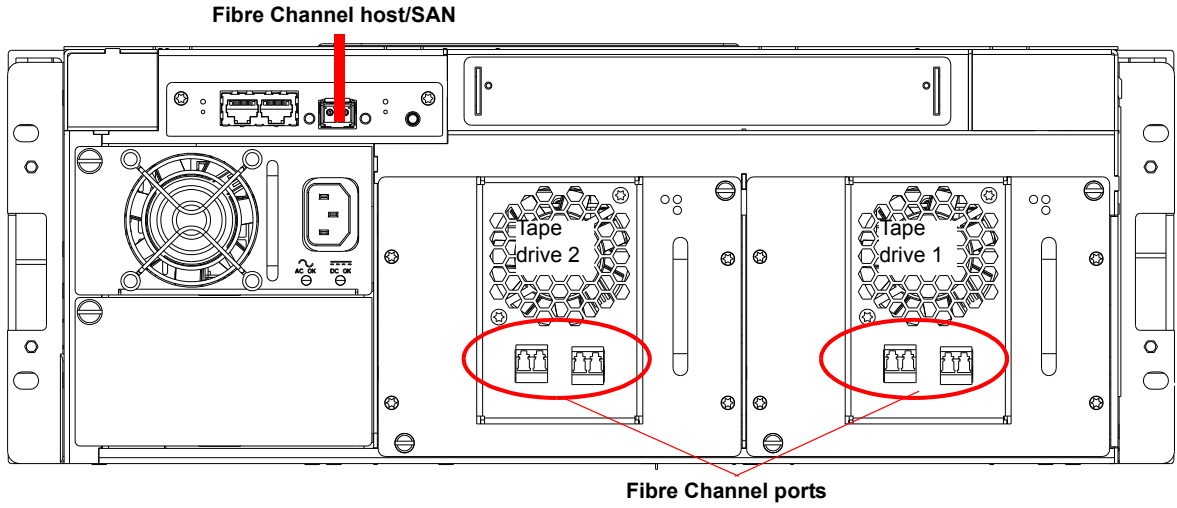
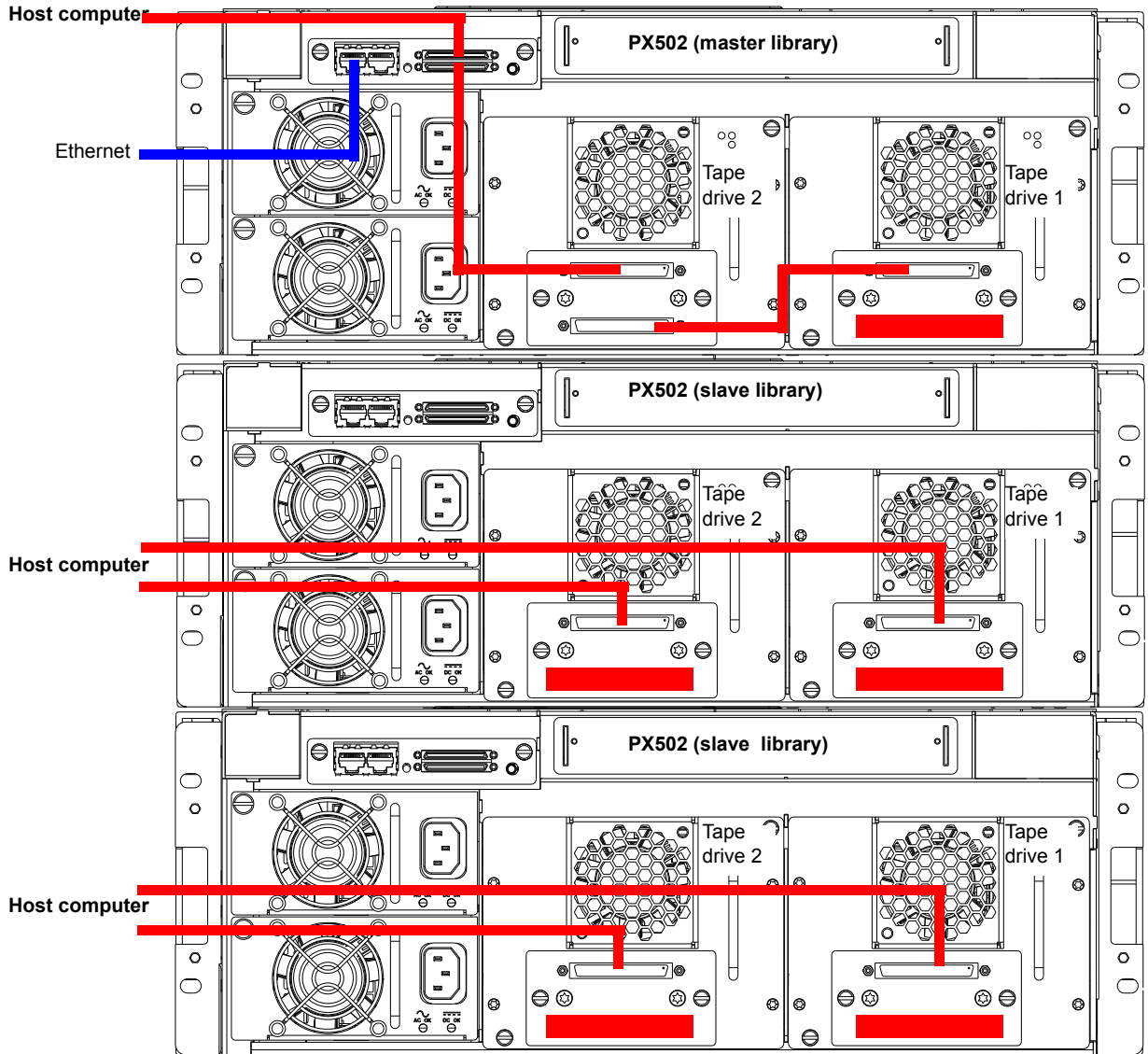


Figure 117 PX502 Stacked  
Cabling Configuration (SCSI  
Shown)



**The library host and Ethernet network are connected only to the Master library.**

---

## Loading the Tape Cartridges

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Before operating the library, load the appropriate tape cartridges (LTO and/or SDLT) into the library starting with the left-hand magazines (refer to [Preparing the Library for Operation](#) on page 48 for more information on tape cartridges).

---

## Initial Configuration

---

Initially configuring the library consists of the following steps:

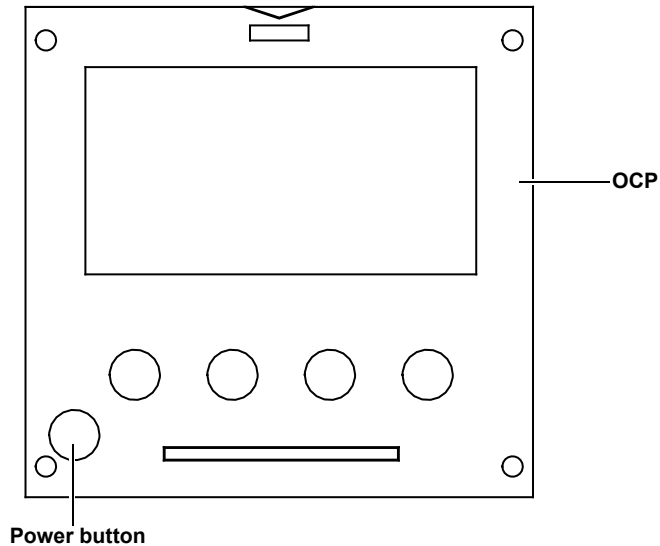
- [Turning on the Library](#)
- [Setting the Library Options](#)
- [Setting the Date and Time](#)
- [Setting Network Information](#)

### Turning on the Library

To turn on the library:

- 1 Verify that:
  - Power cables are firmly in place
  - All doors are closed
- 2 Turn on the power switch located in the lower left-hand corner of the OCP (see [figure 118](#)).

Figure 118 Turning On the Library



During the power up sequence, the library performs an inventory. The power up sequence can take several minutes.

### Setting the Library Options

To set the library options:

- 1 Press **Setup** from the **Home** screen. The OCP displays the **Setup** screen (see [figure 119](#)):

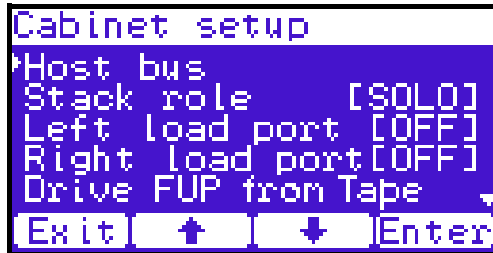
Figure 119 Setup Screen



- 2 From the **Setup** screen, use the up and down arrows to highlight **Cabinet** and press **Enter**.

The **Cabinet** screen displays (see [figure 120](#)):

Figure 120 Library Options Screen



- 3 The **Stack role** screen allows you to configure the library as a “Master” or “Slave” in a multiple library stack. The library is configured “Stand alone” by default. If this is a multiple library stack, use the up and down arrows to highlight **Stack role** and press **Enter** displays the following information about the library:

Table 52 Setting Up the Cabinet

Cabinet Options	Description
Host bus	Sets the SCSI ID for both the library and tape drives.
Stack role	Assigns the library stack role as Master, Slave, or Stand alone. There can be only one Master library in a multiple stack. Once configured as a slave, all library OCP functions can be controlled via the Master library OCP.
Left load port	Enables or disables the left load port
Right load port	Enables or disables the right load port
Drive FUP from tape	Allows you to perform a tape drive firmware update from a firmware update tape cartridge.

### Setting the Date and Time

To set the date and time:

- 1 From the **Setup** screen, use the up and down arrows to highlight **Date and Time** and press **Enter**.

The **Date and Time** screen displays (see [figure 121](#)):

Figure 121 Date and Time Screen



The **Date and Time** screen displays the following information about the library:

- 2 Use the up and down arrows to view or edit the date and time information. Press **Enter** to accept the new settings.
- 3 When you are finished viewing/editing the date and time information, press **Exit** to return to the **Setup** screen.

### Setting Network Information

To view or edit the network information:

- 1 From the **Setup** screen, use the up and down arrows to highlight **Network** and press **Enter**.
- 2 The **Network** screen displays (see [figure 121](#)):

Figure 122 Network Screen



The **Network** screen allows you to view or edit the following network settings:

**Note:** The network settings (IP address, subnet mask, and default gateway) are only active when DHCP is disabled.

- DHCP (default setting)
  - IP address
  - Subnet mask
  - Default gateway
- 3 Use the up and down arrows to select the network setting you wish to view or edit and press **Enter**.

When you are finished viewing/editing the network information, press **Exit** to return to the **Setup** screen.



- 4 For the network information such as the IP address to be active, you must reboot the library by holding down the power button located on the front of the library (see [figure 118](#)).

The library shuts down.

- 5 Push the power button to start the library.

The PX502 tape library is initially configured and ready for use.

---

## Emergency Library Access

Use the following procedure to gain access to the tape cartridge magazines in case of an emergency and the library power is not available.

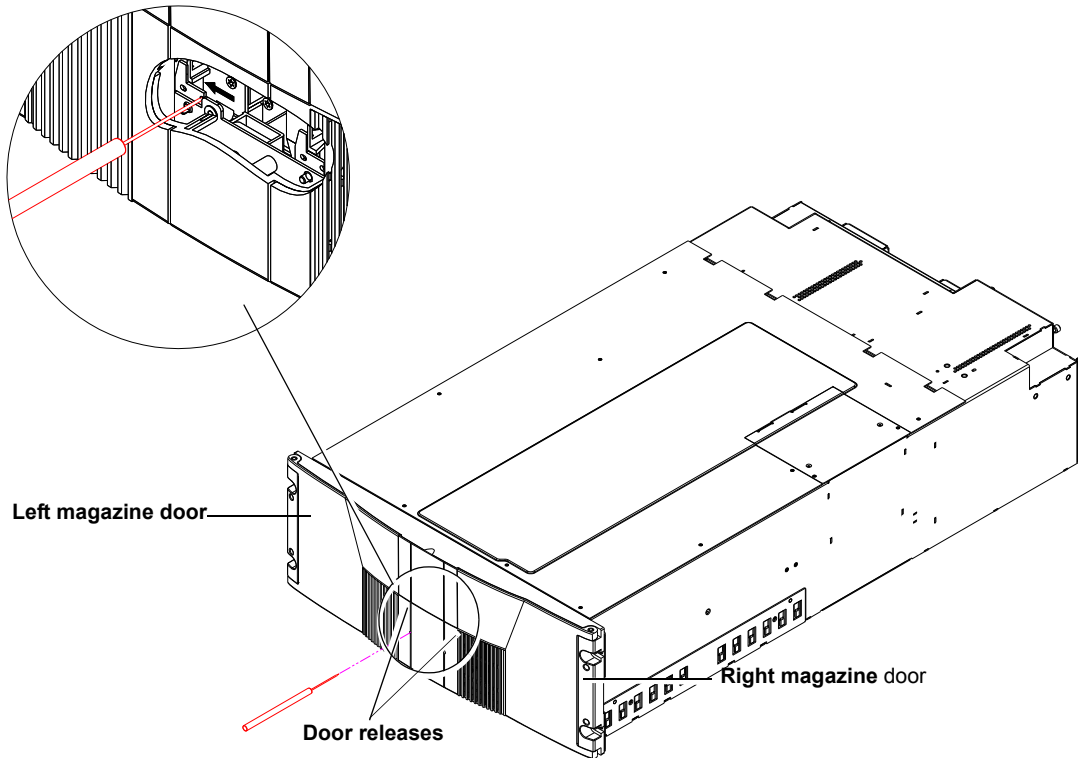
- 1 Put on an antistatic wrist strap and clip it to the library chassis (example: a captive screw on the tape drive cover plates).

**Caution:** Take standard ESD precautions when performing this procedure.

- 2 Insert the metal pick included with the accessory kit into the release holes and trip the magazine door release for both the right and left magazine doors (see [figure 123](#)).

The magazine access doors open.

Figure 123 Opening the Right and Left Magazine Access Doors

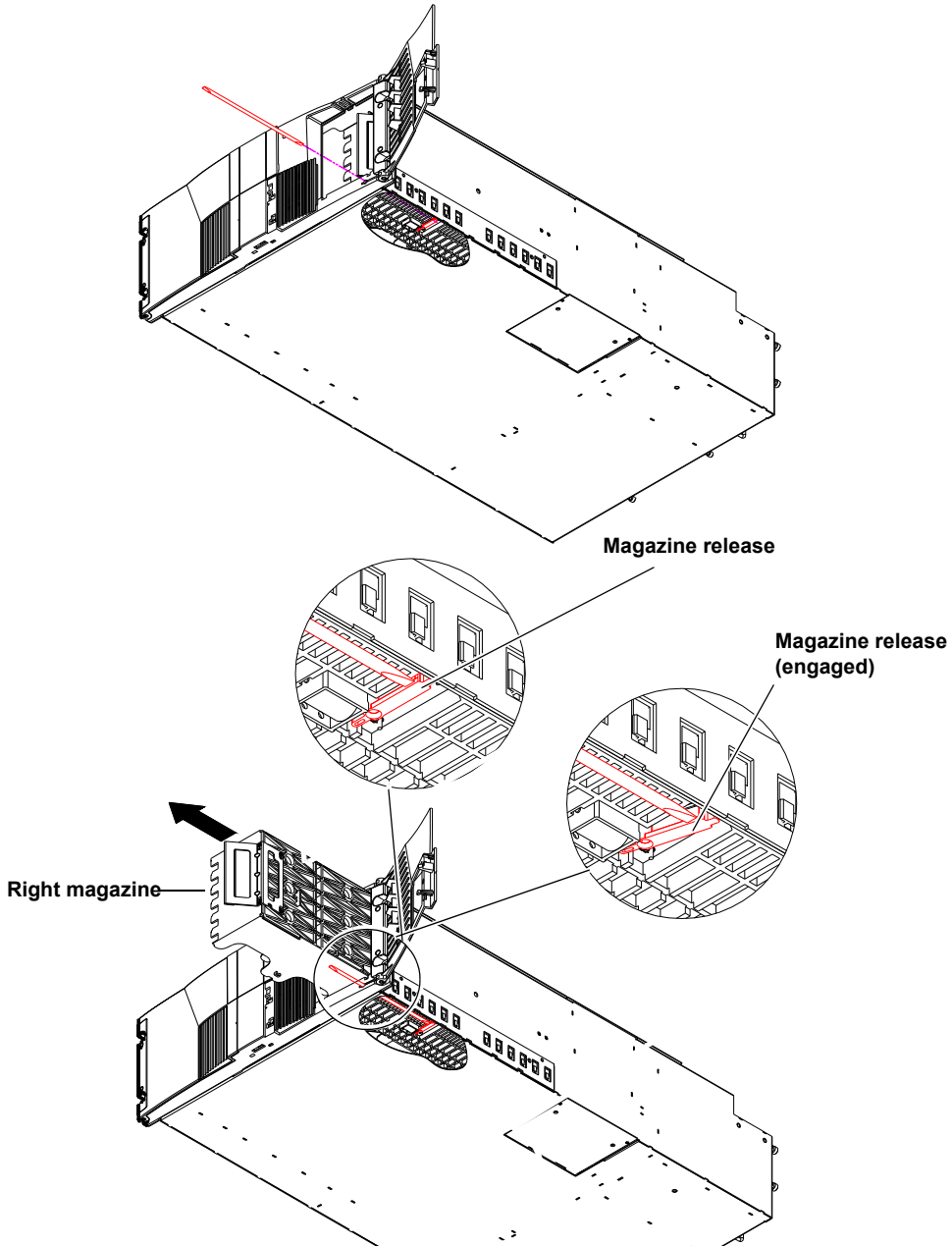


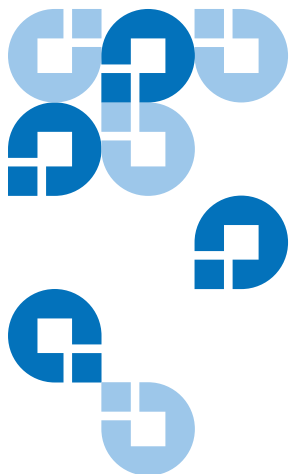
- 3 Insert the wooden dowel that is included in the library accessory kit into the magazine release hole and trip the magazine release to remove the each magazine from the library (see [figure 124](#)). Remove both magazines from the library.

**Note:** Keep the tool as straight as possible when inserting the wooden dowel into the magazine release hole. You must continue to hold the tool against the magazine release until the magazine is entirely out of the library.

The tape cartridge magazines are now accessible.

Figure 124 Removing the  
Magazines





# Repacking the PX502 Library

---

This document explains how to repack the Quantum PX502 library. Follow these instructions carefully to ensure the library is shipped properly.

**Caution:** This procedure requires the packing materials originally sent with the library for proper shipment. If you do not have the library packing materials, contact Quantum customer support for replacement packaging.

This procedure consists of the following steps:

- [Removing the Library from the Rack](#)
- [Installing the Internal Shipping Restraints](#)
- [Packing the Library for Shipment](#)

## Removing the Library from the Rack

To remove the PX502 library from the rack:

- 1 Using the OCP, open the front doors, remove both tape cartridge magazines, and remove any tape cartridges from the fixed bins or FlexLink™ (refer to [chapter 2, Basic Library Operations](#) for information on OCP operation and bin locations).

**Note:** You must remove all tape cartridges from the library prior to parking the library robotics for shipment.

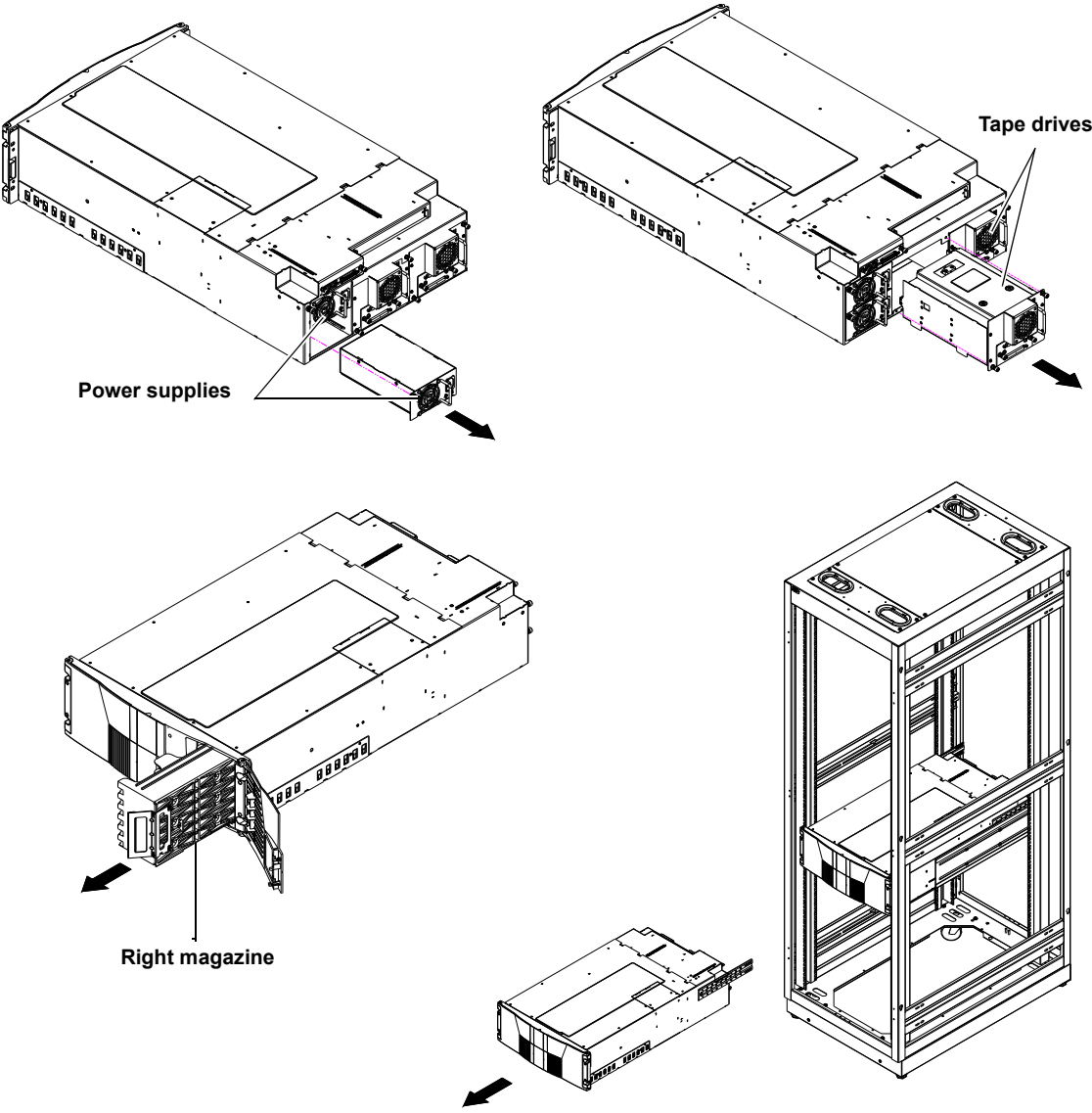
After removing the tape cartridge magazines and closing the doors, the library inventories all possible tape cartridge locations (magazines, fixed slots, Flexlink, and tape drives). This process takes several minutes.

- 2 From the **Library Operations** screen on the OCP, select **Park for Shipping**. The library shuts down automatically.
- 3 From the back of the library, disconnect all power, Ethernet, and SCSI cables from the library and note their locations for later reinstallation.

**Warning:** This unit has more than one power supply cord. Disconnect all power supply cords before servicing to avoid electric shock.

- 4 To remove the library chassis from the rack (see [figure 125](#)):
  - a Loosen the captive screws securing the tape drives to the chassis and remove the tape drive(s) from the back of the library.
  - b Loosen the captive screw securing the power supplies to the chassis and remove the power supplies from the back of the library.
  - c Remove PHILLIPS screws securing each side of the chassis to the rack mounting rails and remove two Allen screws securing both clamps on the back of the library.
  - d Remove the library from the rack.

Figure 125 Removing the  
PX502 Library



## Installing the Internal Shipping Restraints

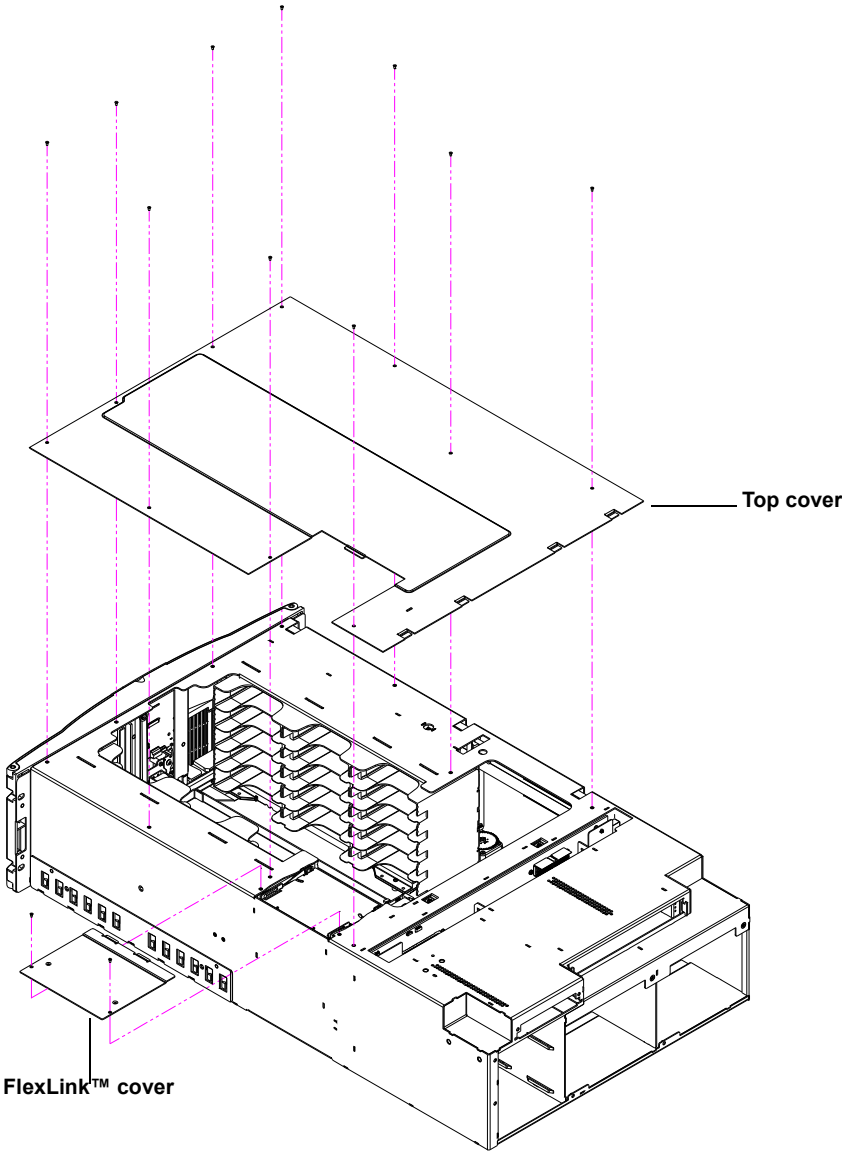
To ensure that the internal robotics within the library is not damaged, you must install the internal shipping restraints on the robotics.

**Caution:** Failure to install the shipping restraints on the robotics may void your warranty.

To install the internal shipping restraints:

- 1 Remove the ten PHILLIPS screws securing the top cover plate to the library chassis (see [figure 126](#)):

Figure 126 Removing the Top Cover



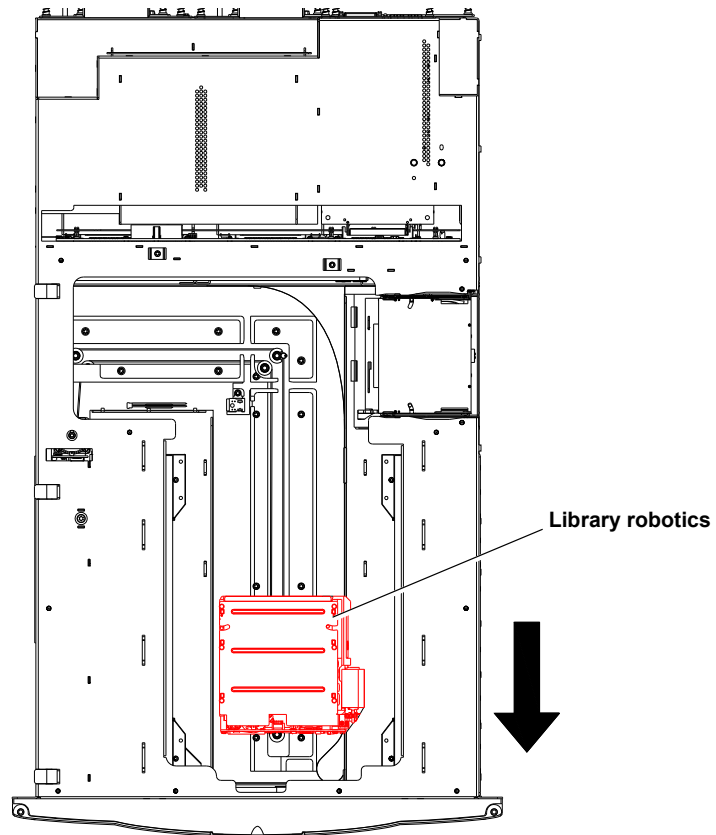


- 2 If the library is not operational and the **Park for Shipping** command was not executed, move the robotics to the front of the library (see [figure 127](#)).

**Caution:** Take standard ESD precautions when working within the library chassis.

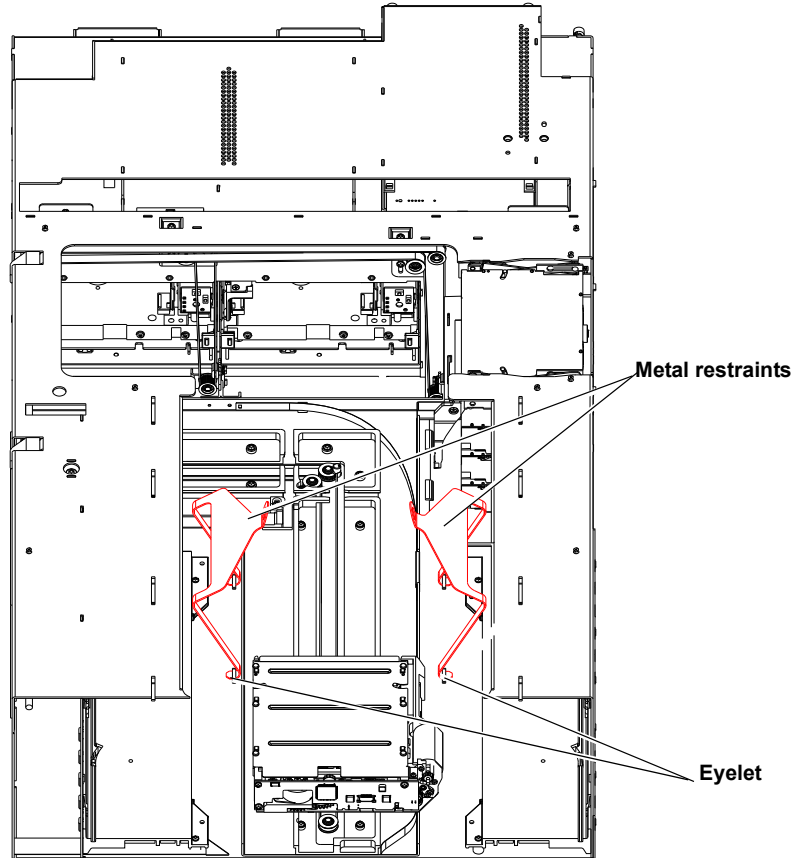
**Note:** If there are any cartridges in the fixed bins, you can remove them now.

Figure 127 Moving the Robotics



- 3 Install the metal restraints through the chassis eyelets as shown in [figure 128](#).

Figure 128 Inserting  
the Metal Restraint

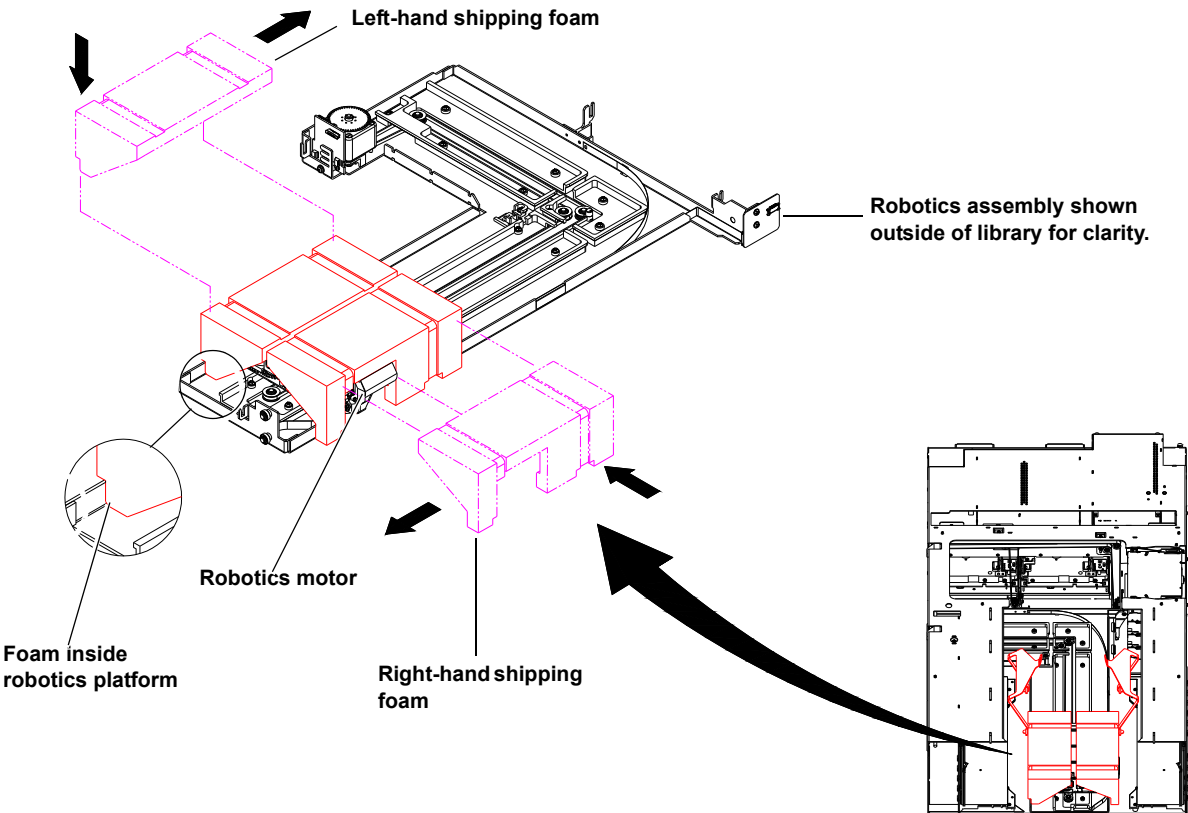


- 4 Install the two halves of the robotics shipping foams as shown in [figure 129](#):

**Caution:** Take standard ESD precautions when working within the library chassis.

- a Install the left-hand foam first so that it fits down into the robotics platform, then push towards the back of the unit until it stops.
- b Install the right-hand foam onto the library robotics so the motor fits into the foam opening, then push towards the front of the library until it stops.

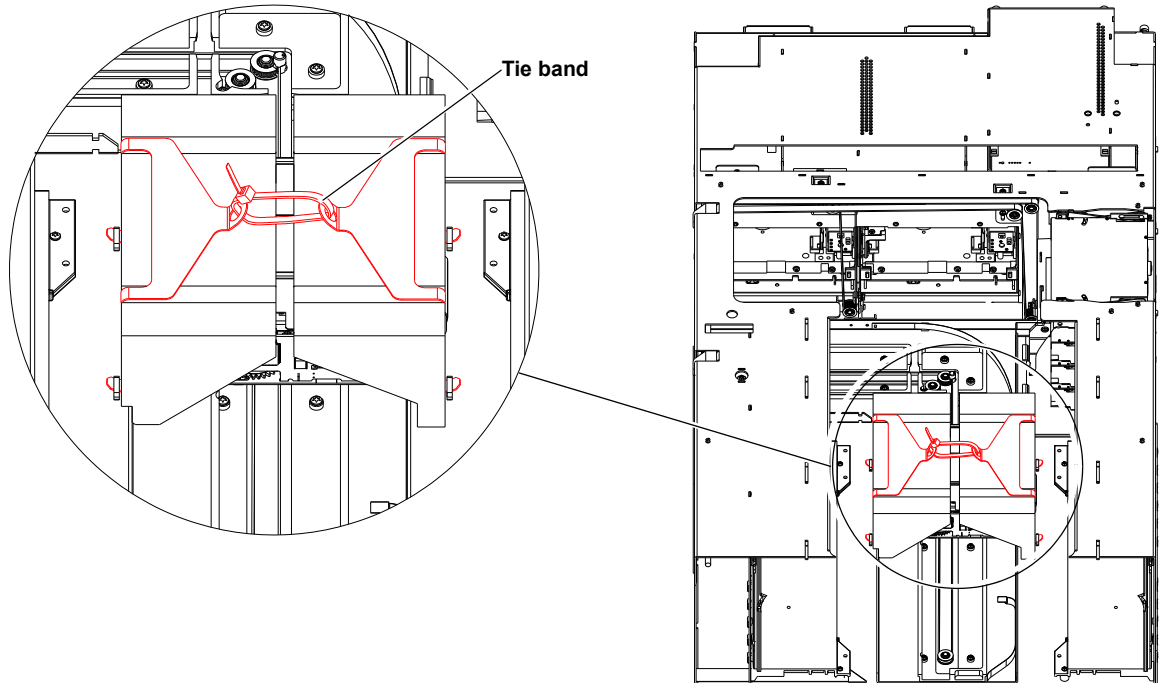
Figure 129 Installing the Robotics Restraints



- 5 Slide the robotics with the shipping foams under the metal restraints so the metal bands fall into the restraint cutouts. Clamp the two halves of the metal restraints together and secure with a tie band to secure the robotics to the library chassis (see [figure 130](#)).

**Caution:** Move the robotics assembly with the shipping foams gently.

Figure 130 Securing the  
Robotics



- 6 Install the top cover previously removed in [step 1](#).
- 7 Install the magazines, tape drives, and power supplies previously removed in [Removing the Library from the Rack](#).
- 8 To install the tape magazines, refer to [Emergency Library Access](#) on page 226 for information on opening the library doors without library power.

---

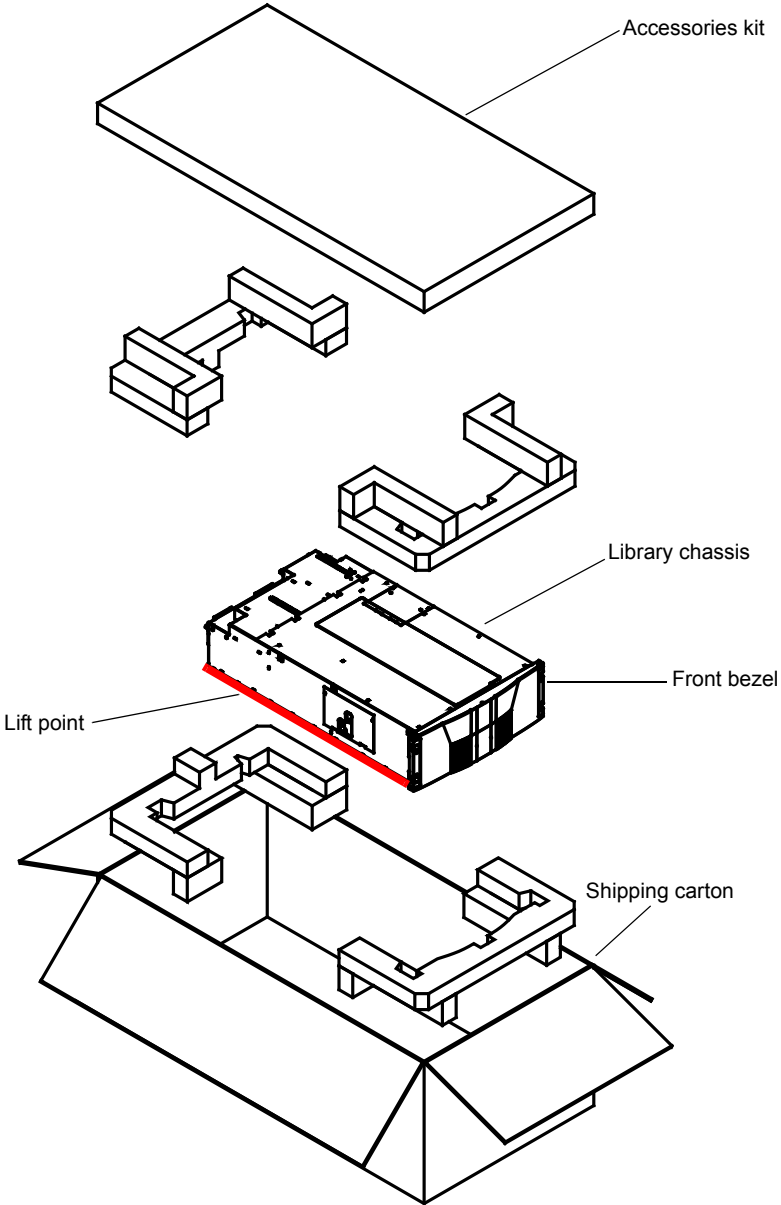
## Packing the Library for Shipment

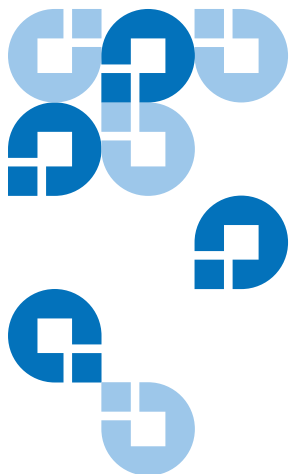
- 1 Package the library into the shipping carton as shown in [figure 131](#).

**Warning:** At least two people are required to move the library chassis.

**Caution:** Lift the library chassis at the sides. Avoid putting the weight of the library chassis on the front bezel.

Figure 131 Preparing the Library for Shipping





# Regulatory Statements

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This appendix provides the regulatory statements for the Quantum PX500 Series libraries, in the following languages:

- English (page 208)
- Deutsch (seite page 243)
- Español (página page 245)
- Français (page page 247)
- Italiano (pagina page 249)
- Svenska (sidan page 251)
- 简体中文 (Simplified Chinese) (page 253)
- 繁體中文 (Traditional Chinese) (page 255)
- 日本語 (Japanese) (page 257)
- 한국어 (Korean) (page 259)

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## English

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**FCC Statement**

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.

Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

Operation of this equipment in a residential area may cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following 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.

---

**Taiwan (BSMI) Statement**

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

---

**Japan (VCCI) Statement**

この装置は、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。

**VCCI- A**



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## DEN-AN Notice (Japan Industry Canada Digital Apparatus)

すべての電源コードが同じ定格電流を使用するとは限りません。同封されている電源コードを他の製品と一緒に使用しないでください。また、家庭用の延長コードをQuantum製品と一緒に使用しないでください。複数の電源コードを必要とする製品の電源を完全に切るには、システムに接続しているすべての電源コードを外してください。

**Reference:** *Interference-Causing Equipment Standard, ICES-003, Issue 2*

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

---

## CISPR-22 Warning!

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

---

## Notice for USA and CANADA Only

If shipped to USA, use the UL LISTED power cord specified below for 100-120 V operation. If shipped to Canada, use the CSA CERTIFIED power cord specified below for 100-120V operation.

Plug Cap	Parallel blade with ground pin (NEMA 5-15P configuration)
Cord	Type: SJT, three 16 AWG (1.5 mm <sup>2</sup> ) or 18 AWG (1.0 mm <sup>2</sup> ) wires
Length	Maximum 15 feet (4.5m)
Rating	Minimum 10 A, 125 V

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## Laser Statement

**CAUTION:** With all panels and enclosures in place, this product is rated as a Class I laser product.

**CAUTION:** Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure.

---

### Library Battery Statement

**CAUTION:** This product contains a Lithium battery. Lithium may be considered a hazardous material. Dispose of this battery in accordance with local, state, and federal laws. The Lithium batteries included in this product are:

- Panasonic BR1225
- IC Battery ST Micro M41T81

### Battery Contained in Product:

“Perchlorate Material – special handling may apply, See [www.dtsc.ca.gov/hazardouswaste/perchlorate](http://www.dtsc.ca.gov/hazardouswaste/perchlorate).”

- The foregoing notice is provided in accordance with California Code of Regulations Title 22, Division 4.5 Chapter 33, Best Management Practices for Perchlorate Materials. This product/part includes a lithium battery which contains a perchlorate substance.

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## Deutsch

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### Regelungen der FCC

Nach Tests wurde festgelegt, dass dieses Gerät den digitalen Geräten der Klasse A entspricht und den Vorschriften in Abschnitt 15 der Regelungen der FCC unterliegt. Durch diese Vorschriften wird ein angemessener Schutz vor schädlichen Strahlungen gewährleistet, wenn dieses Gerät in einer kommerziellen Umgebung betrieben wird. Von den Geräten wird Hochfrequenzenergie erzeugt, genutzt und abgestrahlt, die bei einer im Widerspruch zu diesem Handbuch stehenden Installation oder Nutzung Funkstörungen erzeugen kann.

Änderungen und Modifikationen an diesem Gerät können zum Erlöschen der Betriebserlaubnis für dieses Gerät führen.

Der Betrieb dieses Geräts in Wohngebieten kann zu Empfangsstörungen führen, die der Verursacher auf eigene Kosten beheben muss.

Dieses Gerät erfüllt die Vorschriften in Abschnitt 15 der Regelungen der FCC. Der Betrieb unterliegt den folgenden Bedingungen:

- 1 Das Gerät darf keine schädlichen Störungen hervorrufen und
- 2 Das Gerät muss alle eingehenden Störungen aufnehmen, einschließlich Störungen, die einen unerwünschten Betrieb verursachen können.

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## Regelungen für Taiwan

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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## Industry Canada (Digital-Apparate)

**Referenz:** *Norm für störungsverursachende Geräte*, ICES-003, Ausgabe 2

Dieses Digitalgerät der Klasse A erfüllt alle Anforderungen der kanadischen Vorschriften bezüglich störungsverursachender Geräte (Canadian Interference-Causing Equipment Regulations).

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## CISPR-22 Warnung!

Dies ist ein Produkt der Klasse A. Dieses Produkt kann in Wohngebieten Funkstörungen verursachen, die vom Verursacher durch angemessene Maßnahmen behoben werden müssen.

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## Hinweis nur für USA und KANADA

Wenn dieses Produkt in die USA geliefert wird, muss das nachstehend für einen 100-120-Volt-Betrieb spezifizierte und von UL zugelassene Netzkabel verwendet werden. Wenn dieses Produkt nach Kanada geliefert wird, muss das nachstehend für einen 100-120-Volt-Betrieb spezifizierte und von CSA zugelassene Netzkabel verwendet werden.

Steckerausführung

Parallele Steckzungen mit Erdungsstift  
(NEMA 5-15P-Konfiguration)

Kabel	Typ: SJT, drei 16 AWG (1,5 mm <sup>2</sup> )- oder 18 AWG (1,0 mm <sup>2</sup> )-Leiter
Länge	Max. 15 Fuß (4,5 m)
Nennleistung	Min. 10 A, 125 V

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### Laser-Erklärung

**VORSICHT:** Wenn alle Abdeckungen und Gehäuseteile korrekt angebracht sind, handelt es um ein Produkt der Laserklasse 1. Der Strichcodescanner in diesem Produkt ist jedoch ein Laser Klasse II. Vermeiden Sie die Aussetzung an die von dem Strichcodescanner ausgehenden Strahlen. Blicken Sie nicht direkt in den Strahl.

**VORSICHT:** Die unsachgemäße Verwendung von Bedienelementen oder Einstellungen bzw. die Ausführung von Arbeitsschritten, die nicht in der mit dem Gerät gelieferten Dokumentation beschrieben sind, können dazu führen, dass gesundheitsschädigende Strahlungen freigesetzt werden.

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### Hinweis zur Bibliotheksbatterie

**VORSICHT:** Dieses Produkt enthält eine Lithium-Batterie. Das nichtflüchtige RAM, Dallas Semiconductor DS1743-100, enthält eine Lithium-Batterie. Lithium ist eventuell als gefährliches Material zu betrachten. Die Entsorgung dieser Batterie muss unter Einhaltung aller lokalen, regionalen und bundesweiten Gesetze und Vorschriften erfolgen.

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## Español

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### Declaración FCC

Este equipo ha sido sometido a prueba y ha demostrado cumplir con los límites de un dispositivo digital de Clase A, conforme a la Parte 15 de las Normas FCC. Estos límites están diseñados para proporcionar una protección razonable contra las interferencias perjudiciales cuando el equipo funciona en un entorno comercial. Este equipo genera, usa y puede emitir energía de radiofrecuencia y, si no se instala ni se usa de

acuerdo con el manual de instrucciones, puede provocar interferencias perjudiciales para las comunicaciones de radio.

Cualesquiera cambios o modificaciones realizados a este equipo pueden anular la autoridad del usuario para utilizar este equipo.

El uso de este equipo en un área residencial puede provocar interferencias, en cuyo caso será el usuario quien tenga que correr con los gastos de las medidas que puedan ser necesarias para corregir las interferencias.

Este dispositivo cumple con la Parte 15 de las Normas FCC. El funcionamiento está sujeto a las siguientes condiciones:

- 1 Este dispositivo no debe causar interferencias perjudiciales, y
- 2 Este dispositivo debe aceptar cualquier interferencia que reciba, incluidas aquéllas que puedan provocar un funcionamiento no deseado.

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### Declaración para Taiwán

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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### Industria de Canadá (Aparato digital)

**Referencia:** *Interference-Causing Equipment Standard (Estándar para equipos que causan interferencia)*, ICES-003, Issue 2 (Tema 2)

Este aparato digital de Clase A cumple todos los requisitos de la normativa canadiense sobre equipos que causan interferencia.

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### Advertencia CISPR-22

Éste es un producto de Clase A. En un entorno doméstico, este producto puede causar interferencias de radio, en cuyo caso puede ser necesario que el usuario tome medidas adecuadas.

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### Aviso sólo para EE.UU. y CANADÁ

Si el producto se ha fabricado para EE.UU., utilice el cable de alimentación UL LISTED que se especifica más adelante para el funcionamiento a 100-120 V. Si el producto se ha fabricado para Canadá, utilice el cable de alimentación CSA CERTIFIED que se especifica más adelante para el funcionamiento a 100-120 V.

Enchufe	Cuchilla paralela con patilla de conexión a tierra (configuración NEMA 5-15P)
Cable Tipo	SJT, tres cables 16 AWG (1,5 mm <sup>2</sup> ) ó 18 AWG (1,0 mm <sup>2</sup> )
Longitud	Máxima de 15 pies (4,5m)
Clasificación	Máximo 10 A, 125 V

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### Declaración sobre láser

**PRECAUCIÓN:** Con todos los paneles y cubiertas en su sitio, este producto se clasifica como un producto láser de Clase I. Sin embargo, el lector de código de barras que hay en el interior de este producto es un láser de Clase II. Evite la exposición a la luz del láser que emite el lector de código de barras. No mire fijamente el rayo.

**PRECAUCIÓN:** El uso de controles o ajustes o la realización de procedimientos distintos de los que se especifican en este manual pueden provocar una exposición peligrosa.

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### Declaración sobre la batería de la biblioteca

**PRECAUCIÓN:** Este producto contiene una batería de litio. La memoria RAM no volátil, Dallas Semiconductor DS1743-100, contiene una batería de litio. El litio puede ser considerado un material peligroso. Deseche la batería conforme a la norma vigente de aplicación local, del estado y federal.

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## Français

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### Déclaration de la FCC

Cet équipement a été testé et s'est révélé conforme aux limites d'un appareil numérique de Classe A, conformément à l'alinéa 15 de la

réglementation de la FCC. Ces limites sont conçues pour fournir une protection adéquate contre les perturbations nuisibles lorsque l'équipement fonctionne dans un environnement commercial. Cet équipement génère, utilise et peut émettre une énergie à fréquence radio et risque, s'il n'est pas installé et utilisé conformément au manuel d'instruction, de créer des perturbations nuisibles aux services de radiocommunication.

Tout changement ou modification apporté à cet équipement risque d'annuler le droit d'utiliser l'équipement.

L'utilisation de cet équipement dans une zone résidentielle risque de créer des perturbations auxquelles l'utilisateur devra remédier à ses propres frais.

Cet appareil est conforme à l'alinéa 15 de la réglementation de la FCC. Le fonctionnement de cet équipement est soumis aux conditions suivantes :

- 1 Cet appareil ne peut générer de perturbations nuisibles et
- 2 Cet appareil doit accepter les perturbations reçues, notamment les perturbations qui risquent de générer un fonctionnement non souhaité.

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## Réglementation de Taïwan

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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## Industrie Canada (Appareil numérique)

**Référence :** *Norme sur le matériel brouilleur*, NMB-003, numéro 2

Cet appareil numérique de Classe A satisfait à toutes les exigences des réglementations canadiennes sur le matériel brouilleur.

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## Avertissement CISPR-22 !

Ceci est un produit de Classe A. Dans un environnement résidentiel, ce produit risque de générer des perturbations radio auxquelles l'utilisateur doit peut-être remédier.

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### Avis pour les États-Unis et le Canada uniquement

En cas d'envoi aux États-Unis, utilisez le câble d'alimentation CLASSÉ UL spécifié ci-dessous pour un fonctionnement à 100-120 V. En cas d'envoi au Canada, utilisez le câble d'alimentation CERTIFIÉ CSA spécifié ci-dessous pour un fonctionnement à 100-120 V.

Fiche	Broche parallèle avec broche de mise à la terre (configuration NEMA 5-15P)
Cordon	Type : SJT, trois fils 16 AWG (1,5 mm <sup>2</sup> ) ou 18 AWG (1,0 mm <sup>2</sup> )
Longueur	15 pieds (4,5 m) au maximum
Courant nominal	10 A au minimum, 125 V

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### Réglementation relative au laser

**ATTENTION** : Avec tous les panneaux et enceintes en place, ce produit est classé comme un produit laser de Classe I. Le lecteur de codes-barres à l'intérieur de ce produit est, cependant, un laser de Classe II. Évitez toute exposition à la lumière laser émise par le lecteur de codes-barres. Ne fixez pas le faisceau des yeux.

**ATTENTION** : L'utilisation de commandes ou de réglages ou l'exécution de procédures autres que celles spécifiées ici peuvent entraîner une exposition dangereuse.

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### Réglementation relative à la pile de la bibliothèque

**ATTENTION** : Ce produit comporte une batterie au lithium. La mémoire RAM non-volatile, Dallas Semiconductor DS1743-100, comporte une pile au lithium. Le lithium peut être considéré comme un matériau dangereux. Mettez cette batterie au rebut conformément aux lois locales, nationales et fédérales.

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## Italiano

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### Dichiarazione FCC

Questa apparecchiatura è stata provata e trovata conforme ai limiti per i dispositivi digitali di Classe A, relativi alla Parte 15 delle norme FCC. Questi limiti sono concepiti per garantire un livello ragionevole di



protezione da interferenze dannose quando l'apparecchiatura viene azionata in un ambiente commerciale. Questa apparecchiatura genera, utilizza e può irradiare energia a radiofrequenza e, se non installata e utilizzata secondo il manuale di istruzioni, potrebbe causare interferenze dannose alle comunicazioni radio.

Eventuali cambiamenti o modifiche apportati a questa apparecchiatura potrebbero invalidare il diritto dell'utente ad utilizzare questa apparecchiatura.

Il funzionamento dell'apparecchiatura in una zona residenziale potrebbe causare interferenze, nel qual caso l'utente dovrà a proprie spese prendere i dovuti provvedimenti per eliminare le interferenze.

Questo dispositivo è conforme alla Parte 15 delle norme FCC. Il funzionamento è soggetto alle seguenti condizioni:

- 1 Questo dispositivo non può causare interferenze dannose e
- 2 Questo dispositivo deve accettare eventuali interferenze ricevute, incluse le interferenze causate da funzionamento indesiderato.

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## Dichiarazione per Taiwan

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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## Industry Canada (apparati digitali)

**Riferimento:** *Interference-Causing Equipment Standard*, ICES-003, 2. edizione

Questo dispositivo digitale di Classe A è conforme a tutti i requisiti dei regolamenti canadesi per apparecchiature che causano interferenze.

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## Avvertenza CISPR-22!

Questo è un prodotto di Classe A. In un ambiente domestico questo prodotto potrebbe causare interferenze radio; in tal caso l'utente dovrà adottare tutti i dovuti provvedimenti.

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### Avviso esclusivamente per Stati Uniti e Canada

Se il prodotto viene spedito negli Stati Uniti, utilizzare il cavo di alimentazione elencato UL, specificato di seguito per il funzionamento a 100-120 V. Se il prodotto viene spedito in Canada, utilizzare il cavo di alimentazione certificato CSA, specificato di seguito per il funzionamento a 100-120 V.

Cappuccio della spina	Lama parallela con perno di terra (configurazione NEMA 5-15P)
Cavo:	Tipo: SJT, tre fili da 16 AWG (1,5 mm <sup>2</sup> ) o 18 AWG (1,0 mm <sup>2</sup> )
Lunghezza	Massima di 15 piedi (4,5 m)
Portata	Minima di 10 A, 125 V

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### Dichiarazione sui dispositivi laser

**ATTENZIONE:** Con tutti i pannelli e le custodie in posizione, questo prodotto è classificato come prodotto laser di Classe I. Lo scanner per codici a barre all'interno del prodotto è invece un dispositivo laser di Classe II. Evitare l'esposizione ai raggi laser emessi dallo scanner per codici a barre. Non guardare fisso nel fascio di luce.

**ATTENZIONE:** L'utilizzo di comandi, regolazioni o procedure diversi da quelli specificati in questa sede potrebbe causare livelli di esposizione pericolosi.

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### Dichiarazione sulla batteria della libreria

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**ATTENZIONE:** Questo prodotto contiene una batteria al litio. La RAM non volatile, di tipo Dallas Semiconductor DS1743-100, contiene una batteria al litio. Il litio potrebbe essere considerato un materiale pericoloso. Smaltire la batteria secondo quanto previsto dalle leggi locali, regionali e nazionali.

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## Svenska

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## FCC-meddelande

Utrustningen har testats och befunnits uppfylla gränserna för en klass A digital enhet i enlighet med del 15 i FCC-reglerna. Gränserna är utformade att tillhandahålla rimligt skydd mot störningar när utrustningen används i en kommersiell miljö. Utrustningen alstrar, använder och kan utstråla radiofrekvent energi och kan, om den ej installeras och används i enlighet med instruktionshandboken, orsaka störningar i radiokommunikation.

Eventuella ändringar eller modifikationer av utrustningen kan ogiltigförklara användarens rätt att använda utrustningen.

Användning av utrustningen i bostadsområden kan orsaka störningar och i sådana fall måste användaren bekosta de åtgärder som krävs för att åtgärda störningarna.

Enheten uppfyller del 15 i FCC-reglerna. Användningen underkastas följande villkor:

- 1 Enheten får inte orsaka störningar och
- 2 enheten måste tåla mottagna störningar, inklusive störningar som kan orsaka oönskad funktion.

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## Meddelande för Taiwan

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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## Kanada (digital utrustning)

**Hänvisning:** *Standard för störningsalstrande utrustning, ICES-003, utgåva 2*

Denna klass A för digital utrustning uppfyller alla krav i de kanadensiska föreskrifterna för störningsalstrande utrustning.

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## CISPR-22 Varning!

Detta är en klass A produkt. I en hemmiljö kan denna produkt orsaka radiostörningar, i vilket fall det kan krävas att användaren vidtar lämpliga åtgärder.

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## Meddelande för USA och KANADA enbart

Om utrustningen levereras i USA, använd den UL-listade nätsladden som specificeras nedan för användning med 100-120 V. Om utrustningen levereras i Kanada, använd den CSA-certifierade nätsladden som specificeras nedan för användning med 100-120 V.

Kontaktkåpa	Parallellt blad med jordstift (NEMA 5-15P-konfiguration)
Sladd	Typ: SJT, tre 1,5 mm <sup>2</sup> (16 AWG) eller 1,0 mm <sup>2</sup> (18 AWG) ledare
Längd	Maximalt 15 fot (4,5 m)
Märkvärde	Minimalt 10 A, 125 V

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## Lasermeddelande

**FÖRSIKTIGHET:** Med alla paneler och luckor på plats klassificeras denna produkt som en laserprodukt klass 1. Streckkodsläsaren inuti produkten är klassificerad som en laserprodukt klass II. Undvik kontakt med streckkodsläsarens laserstråle. Titta inte in i strålen.

**FÖRSIKTIGHET:** Användning av kontroller, justeringar eller utförande av rutiner andra än de som anges i detta dokument kan leda till farlig exponering för strålning.

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## Meddelande om biblioteks batteri

在住宅区操作此设备时可能会造成干扰，在此情况下，用户需自行采取必要措施来纠正干扰。

此设备已经过测试，符合 FCC 规则第 15 部分中对 A 级数字设备的限制。这些限制旨在对该设备用于商业环境时产生的有害干扰提供合理保护。此设备产生、使用射频能量，并可能辐射该能量，如果未根据安装手册安装和使用，还可能会对无线电通信造成有害干扰。

**ÖRSIKTIGHET:** Produkten innehåller ett litiumbatteri. Det icke-flyktiga RAM-minnet, Dallas halvledare DS1743-100, innehåller ett litiumbatteri. Litium anses som riskavfall. Kasta batteriet i enlighet med lokala och nationella lagar.

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## 简体中文 Simplified Chinese

## FCC 声明

对此设备进行任何更改或修改都可能导致用户无权操作此设备。

此设备符合 FCC 规则第 15 部分的规定。操作时需符合以下条件：

- 1 此设备不会造成有害干扰，并且
- 2 此设备必须接受收到的任何干扰，包括可能导致非要求操作的干扰。

## 台湾声明

### 警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

## 加拿大工业部（数字设备）

**参考：**设备引起干扰标准，ICES-003 第 2 版

此 A 级数字设备符合《加拿大引起干扰设备规则》的所有要求。

### CISPR-22 警告！

此为 A 级产品。在住宅环境中使用此产品时，可能会造成无线电干扰，在此情况下，用户需采取适当的措施。

## 仅限于美国和加拿大的声明

插头	如果设备运往美国，请使用下面为 100-120 V 操作环境指定的 UL LISTED 电源线。如果设备运往加拿大， <del>请</del> 使用下面为 100-120 V 操作环境指定的 CSA CERTIFIED 电源线。 带接地脚的平行叶片（NEMA 5-15P 配置）
电源线	类型：SJT、三根 16 AWG（1.5 平方毫米 <sup>2</sup> ）或 18 AWG（1.0 平方毫米 <sup>2</sup> ）导线
长度	最长 4.5 米（15 英尺）
额定值	最小 10 A、125 V

## 激光声明

### 1 级激光产品

**注意：**所有面板和机壳均存在的情况下，此产品被列入 I 级激光产品。但是，此产品内的条形码扫描器是 II 级激光产品。请避免遭受条形码扫描器发出的激光辐射。请勿直视激光光束。

**注意：**使用本文档中未指定的控制、调整或执行过程可能会导致危险。

## 库存机电池声明

### 注意

此产品包含锂电池。非易失性 RAM 采用 Dallas 半导体 DS1743-100，其中包含锂电池。锂被视为危险材料。处理此电池时应遵照当地、州和联邦的法律。

## 繁體中文 Traditional Chinese

## FCC 聲明

此裝置經測試，符合 FCC 規則第 15 部份中對 A 級數位裝置的限制。這些限制旨在提供合理保護，防止該裝置工作於商業環境時產生有害干擾。此裝置產生、使用射頻能量，並可能輻射射頻能量，如果未根據說明手冊安裝和使用，可能會對無線電通訊造成有害干擾。

對此裝置進行任何變更或修改都可能導致使用者操作此裝置授權無效。在住宅區操作此裝置時可能會造成干擾，在此情況下，使用者需自行採取必要措施來糾正干擾。

此裝置符合 FCC 規則第 15 部份的規定。操作時需符合以下條件：

- 1 此裝置不會造成有害干擾，並且
- 2 此裝置必須接受收到的任何干擾，包括可能導致意外操作的干擾。

## 臺灣聲明

### 警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

## 加拿大工業部（數位裝置）

**參考：**引起干擾的裝置標準，ICES-003 第 2 次發行

此 A 級數位裝置符合《加拿大引起干擾裝置之規則》的所有要求。

## CISPR-22 警告！

此為 A 級產品。在住宅環境中使用此產品時，可能會造成無線電干擾，在此情況下，使用者可能需採取適當的措施。

## 僅限於美國和加拿大的聲明

如果裝置運往美國，請使用下面指定的針對 100-120 V 操作環境的 UL LISTED 電源線。如果裝置運往加拿大，請使用下面指定的針對 100-120 V 操作環境的 CSA CERTIFIED 電源線。

插頭	帶接地針腳的平行葉片（NEMA 5-15P 設定）
電源線	類型：SJT、三根 16 AWG（1.5 平方公釐）或 18 AWG（1.0 平方公釐）導線
長度	最長 4.5 公尺
額定值	最小 10 A、125 V

## 鐳射聲明

### 1 級鐳射產品

**注意：**所有面板和機殼均安全到位的情況下，此產品被列入 I 級鐳射產品。但是，此產品內的條碼掃描器是 II 級鐳射產品。請避免遭受條碼掃描器發出的鐳射光照射。請勿直視鐳射光束。

**注意：**使用本手冊中未指定的控制、調整或執行過程可能會導致危險。

## 媒體櫃電池聲明

此產品包含鋰電池。非易失性 RAM 採用 Dallas 半導體 DS1743-100，其中包含鋰電池。鋰被視為危險材料。處理此電池時應遵照當地、州和聯邦的法律。

### 注意

## 日本語 Japanese



## FCC に関する記述

この装置はテスト済みであり、FCC ルール Part 15 に規定された仕様のクラス A デジタル装置の制限に適合していることが確認済みです。これらの制限は、商業環境で装置を使用したときに、干渉を防止する適切な保護を規定しています。この装置は、無線周波エネルギーを生成、使用、または放射する可能性があり、この装置のマニュアルに記載された指示に従って設置および使用しなかった場合、ラジオ/テレビの受信障害が起こることがあります。

この装置を変更または改造すると、この装置を操作するユーザー権が無効になることがあります。

住宅地でこの装置を使用すると、干渉を引き起こす可能性があります。その場合には、ユーザー側の負担で干渉防止措置を講じる必要があります。

この装置は FCC ルール Part 15 に準拠しています。動作は次の条件に従っていなければなりません。

- 1 当該装置によって、有害な干渉が発生することはない。
- 2 当該装置は、予想外の動作を引き起こす可能性のある干渉も含め、すべての干渉を受け入れなければならない。

## 台湾

### 警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

## Industry Canada (デジタル機器)

参照：Interference-Causing Equipment Standard, ICES-002, Issue 2  
このクラス A デジタル機器は Canadian Interference-Causing Equipment Regulations で定められている条件を満たします。

## CISPR-22 警告

これはクラス A 製品です。国内で使用する場合、電波障害を引き起こす恐れがあります。適切な処置を行ってください。

## アメリカ合衆国とカナダの通知

アメリカ合衆国に出荷した場合、100 ~ 120 V 以下での操作用に指定された UI 一覧の電源コードを使用してください。カナダに出荷した場合、100 ~ 120 V 以下での操作用に指定された CSA 認定の電源コードを使用してください。

プラグキャップ	アースピン付き (NEMA 5-15P)
コードの	種類 : SJT、16 AWG (1.5 mm <sup>2</sup> ) × 3 または 18 AWG (1.0 mm <sup>2</sup> ) ワイヤ
長さ	最大 15 フィート (4.5m)
定格最低	10 A、125 V

## レーザー製品に関する記述

### クラス 1 レーザー製品

**注意：**すべてのパネルとエンクロージャが定位置にある状態で、この製品はクラス 1 レーザー製品に指定されています。当製品内部のバーコードはクラス II レーザーです。バーコードスキャナのレーザー光線との接触を避けてください。光線を見つめないでください。

**注意：**ここに指定された以外の方法で制御、調整、パフォーマンスを行った場合、危険な照射が起こることがあります。

## ライブラリバッテリーに関する記述

### 注意

この製品にはリチウムバッテリーが入っています。不揮発性 RAM である Dallas Semiconductor DS1743-100 にはリチウムバッテリーが含まれています。リチウムは危険性物質と見なされることがあります。このバッテリーを破棄するときは、地方、州、および連邦法に従ってください。

## 한국어 Korean

## FCC 표시

이 장비는 FCC Rules 의 Part 15 에 의하여 테스트되고 Class A 디지털 장치에 대한 제한사항을 준수하는 것으로 검증되었습니다. 이 제한사항은 장비가 상업적 환경에서 작동할 때 해로운 간섭에 대해 적절히 보호되도록 고안되었습니다. 이 장비는 라디오 주파수 에너지를 생성, 사용 및 방출할 수 있고 지시사항에 따라 설치 및 사용되지 않는 경우 무선 통신에 해로운 간섭을 유발할 수 있습니다. 이 장비를 변경 또는 수정하는 경우 장비를 작동하는 사용자의 권한은 무효가 됩니다.

거주 지역에서의 장비를 작동하는 경우 간섭을 유발할 수 있으며, 이 경우 사용자는 자신의 부담으로 간섭을 정정하기 위해 필요한 모든 조치를 취해야 합니다.

이 장치는 FCC Rules 의 Part 15 를 준수합니다. 작동에는 다음 조건이 필요합니다.

- 1 이 장치는 해로운 간섭을 유발할 수 없으며, 또한
- 2 원하지 않는 작동을 유발할 수 있는 간섭을 포함하여 수신되는 모든 간섭을 수용해야 합니다.

## 대만 정책

### 警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

## 캐나다 산업 ( 디지털 장치 )

캐나다 · 가전 · 가전 · 가전 · ICES-002, Issue 2  
이 Class A 디지털 장치는 캐나다 간섭 유발 장비 규정의 모든 요구사항을 충족합니다.

## CISPR-22 경고 !

이것은 Class A 제품입니다. 국내 환경에서 이 제품은 사용자가 충분한 조치를 취해야 하는 무선 간섭을 유발할 수 있습니다.

## 유의사항 ( 미국 및 캐나다에만 해당 )

미국으로 출시되는 경우 100-120 V 작동을 위해 아래에 지정된 UL LISTED 전원 코드를 사용하십시오 . 캐나다로 출시되는 경우 100-120 V 작동을 위해 아래에 지정된 CSA CERTIFIED 전원 코드를 사용하십시오 .

플러그 캡	접지 핀이 부착된 병렬 전극 (NEMA 5-15P 구성)
코드	유형 : SJT, 3 선 16 AWG (1.5mm <sup>2</sup> ) 또는 18 AWG (1.0mm <sup>2</sup> ) 전선
길이	최대 4.5m (15 피트)
정격	최소 10A, 125V

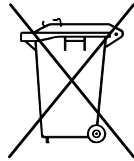
## 레이저 표시

**주의 :** 모든 패널과 인클로우저가 제 위치에 있을 때 이 제품은 Class I 레이저 제품으로 평가됩니다 . 그러나 이 제품 안에 있는 바코드 스캐너는 Class II 레이저입니다 . 바코드 스캐너에서 방출되는 레이저 빛에 노출되지 마십시오 . 빔을 바라보지 마십시오 .

### Class 1 레이저 제품



**주의 :** 여기에서 지정된 것을 제외한 절차를 제어 , 조정 및 수행하는 경우 위험한 결과를 초래할 수 있습니다 .

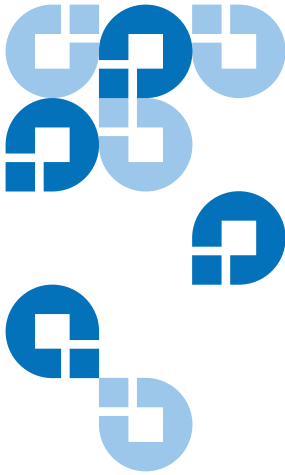
## Disposal of Electrical and Electronic Equipment



This symbol on the product or on its packaging indicates that this product should not be disposed of with your other waste. Instead, it should be handed over to a designated collection point for the recycling of electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please visit our website at: <http://qcare.quantum.com> or contact your local government authority, your household waste disposal service or the business from which you purchased the product.

# Declaration of Conformity

<b>Quantum</b>	<b>DECLARATION OF CONFORMITY</b> According to EN45014
<b>Manufacturer's Name:</b>	Quantum Corporation
<b>Manufacturer's Address:</b>	141 Innovation Drive Irvine, CA 92617-3040 USA
<b>Declares that the Product(s):</b>	
Product Description	Automated Tape Library System
Product Name:	PX500 Series
Model Number(s):	PX502, PX506, PX510
Product Options:	All
<b>Conforms to the following EC Directives and EC Standards:</b>	
<b>Low Voltage Directive 73/23/EEC</b>	
Product Safety:	EN60950-1:2001, First Edition EN60825-1:1994, + A1, A2
<b>EMC Directive 89/336/EEC</b>	
EMC:	EN55022:1998, Class A EN61000-3-2:2000, Class A EN61000-3-3:1995 EN55024:1998 EN61000-4-2:1995 EN61000-4-3:2002 EN61000-4-4:1995 EN61000-4-5:1995 EN61000-4-6:1996 EN61000-4-8:1993 EN61000-4-11:1994
<b>Authorizing Signature:</b>	
 _____ Linda Cheng Manager, Regulatory	<b>Date Issued: 08/29/2005</b>
<b>European Headquarters:</b> 7 Lindenwood, Chineham Business Park Basingstoke, Hampshire RG24 8WD, United Kingdom Telephone: +44 (1) 256 848 713 Fax: +44 (1) 256 848 700	



# Glossary

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## B

**back panel** The panel at the back of the library that contains the connectors for attaching external cabling to the library.

**bar code label** The identification label on cartridges.

**bar code scanner** A laser device that is mounted on the robotic hand and reads the cartridge bar code labels.

---

## C

**calibration** The software measurements and configuration required for successful operation of the library.

---

## F

**Fibre Channel** Fibre Channel interface. This is a interface type used in native Fibre Channel tape drives.

**FCC Class A** Standard established by the U.S. Federal Communications Commission governing electromagnetic emissions.

**FSE** Field service engineer

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## G

**GUI** Graphical user interface. The browser based remote management system use to configure and control the PX500 series libraries.

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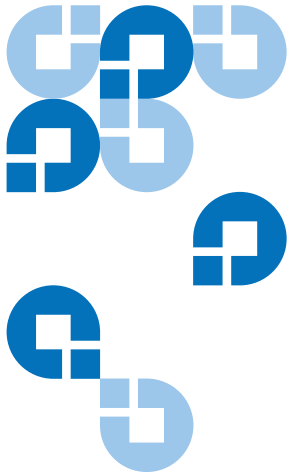
## H

**host computer** The computer that issues SCSI commands to control the library gripper.

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I	<b>ISCI</b> iSCSI is an IP-based standard for linking data storage devices over a network and transferring data by carrying SCSI commands over IP networks.
M	<b>MTBF</b> Mean Time Between Failures <b>MTTR</b> Mean Time To Repair
N	<b>NVRAM</b> Nonvolatile random access memory
O	<b>off-line</b> Library is offline and not able to communicate with a host. <b>on-line</b> Ready for communications with a host <b>OCP</b> Operator control panel.
P	<b>pick</b> The act of removing a cartridge from one location in preparation for placing it in another location. <b>place</b> The act of placing a cartridge in a location after it has been picked from another location. <b>PROM</b> Programmable read-only memory
R	<b>RAM</b> Random access memory
S	<b>SCSI</b> Small Computer System Interface. A communications standard for attaching peripheral equipment to small computers.
T	<b>tape drive</b> The mechanism that reads data from, and writes data to, a tape.
U	<b>UL</b> Underwriters Laboratories





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