



StorageTek SL3000 Modular Library System Customer Orientation Checklist

Library Modules

- Base Module (Base)
- Drive Expansion Module (DEM)
- Cartridge Expansion Module (CEM)
- Parking Expansion Module (PEM)
- Access Expansion Module (AEM)

Library Interfaces

- TCP/IP over Ethernet (Single and Dual)
- SCSI over Fibre Channel

Library Features

- Capacity on Demand and Real Time Growth™
- Any Cartridge, Any Slot™
- Partitioning
- Dual Robotics

Supported Tape Drives

- StorageTek T9840 C,D
 - StorageTek T10000 A,B
 - HP LTO Generation 3, 4, 5
 - IBM LTO Generation 3, 4, 5
- * Encryption-capable drive support

Tape Drive Interfaces

- Fibre Channel
- FICON
- ESCON

Supported Platforms

- Open systems (Windows, Solaris, HP-UX, Linux)
- Enterprise mainframe (MVS, ESA, z/OS, VM)

Management Software

- ACSLS 7.3 or higher
- HSC 6.1 or higher
- VERITAS
- LEGATO
- AS/400
- Tivoli Storage Manager (TSM)
- Computer Associates BrightStor

Plus many others (ask for a list)

Introduction

This checklist is a guide to use when you talk with your customer about the features and functions of the SL3000 modular library system.

After the installation is complete and *before* the customer starts using the library, make sure you take time to discuss and answer any questions about the library. If your customer has experience with StorageTek or other vendor libraries, make sure to point out any operational differences and similarities.

This checklist is intended to help you make sure that the customer is ready to use the library and contributes to the overall customer satisfaction.

Customer Check Out

Complete the following checklist as you certify the customer on the SL3000 library:

- Make sure the customer has a copy of or access to the *SL3000 User's Guide* (PN 31619440x). Refer them to this guide as you go through the checklist.

Modules

Introduce the customer to the various modules of the SL3000 library:

- Base Module (Base)
- Drive Expansion Module (DEM)
- Cartridge Expansion Module (CEM)
- Parking Expansion Module (PEM)
- Access Expansion Module (AEM)



Components

Describe the components on the **front** of the library:

- Cartridge access ports (CAPs)
- CAP Keypad and operation
- Touch screen operator panel (if applicable)
- How to Open the front access doors.
Identify *caution* when opening the front access doors and about how this forces an audit of the library.
(Note: Audits may take from 15 to 60 minutes depending on the capacity.)
- Recommended service clearance should be 61 cm (24 in.)

Describe the components at the **rear** of the library

- Power distribution units and circuit breakers
(Power on and off for N+1 and 2N configurations)
- Electronic control module and circuit breakers
- DC power supplies
- Tape drives (numbering and cabling)
- Rack equipment and guidelines
- Cable routing and function
- Caution* when opening adjacent rear doors
- Recommended service clearance should be 90 cm (35 in.)

Describe the components **inside** the library:

- Inside clearance is 45 cm (18 in.)
- Door dampener
- Cartridge access ports (CAPs)
- Data cartridge slots and arrays
- Reserved area for diagnostic cartridges
- most column has “no access”PEM no access columns
- Different types of walls (front, rear)
- TallBot™ operation (high-level overview)
- How to safely move the TallBots
- Function and purpose of a PEM (Dual TallBots)



Library Console



(See page 5).

Describe what the library console is and does:

- Touch screen operator control panel
- Remote operator panel (networked PC)
- Web browser access (TCP/IP address)
- Help Menu, Search, and Index capabilities
- Screens and functions; Controls and indicators
- Customer passwords
- Monitoring partitions and boundaries
- Adding and activating capacity
- Licensed features
- Other

Safety

Identify the following safety features:

- Emergency exit handles *inside* the library
- Front door interlocks
- Service Keys
- Interior lights

Power-on and -off the Library

Identify how to:

- Power-on the library
- Power-off the library (normal)
- Power-off the library (emergency)
- Power-off the:
 - Library without affecting drive operations
 - Tape drives without affecting library operations
- Library IPL and audit process

Modes of Operation

- Automated mode
- Manual mode
- Degraded mode
- IPL sequence

Operator Tasks

Cover any tasks with the operators about *How To*:

- Perform an audit (hardware, software, and the differences between the two)
- Determine the status of the library and tape drives
- Use the host software commands to vary the library and tape drives online and offline
- Note the location of keys and their differences (rear, front, and service)
- How To Access the Inside of a Library*:

Enter

- Vary the library offline
- If applicable, vary the tape drives offline
- Using the key, open the front access door
- Move the TallBot™ as necessary and
 - Remove a cartridge from the hand
 - Insert cartridges into array slots
 - Locate a cartridge tape inside the library
 - Load/unload a tape drive
 - Handle a stuck cartridge

Exit

WARNING: Before you close the library access door:

- Make sure no one else is inside the library.
- Make sure no foreign objects are inside the library.
- Close, do not slam, the front access door
- Insert the key and lock the access door

Note: Wait at least *5 minutes* before varying the library online to allow for initialization and device discovery.

- Vary the library and associated partitions online
- Vary SL3000 tape drives online if applicable

CAP Usage

Show the operators how to:

- Use the keypad
- Load and unload the CAP (cartridge orientation)
- Handling CAP magazines

About the Tape Drives

Identify the different tape drives inside the library:

- T9840, T10000, and LTO (as applicable)
- Encryption and non-encryption drives
- Drive panels and Virtual Operator Panel (VOP)
- Refer to the drive manuals for more information.

About the Cartridges

Identify the different data cartridge types:

- T9840, T10000, and LTO 2, 3, 4 (as applicable)
- Cleaning and diagnostic cartridges
- VolSafe and WORM cartridges

Describe how to handle cartridges

- Non-labeled and upside down cartridges
- Attach labels (verify supported labels)
- Media ID labels and VOLSER labels
- Set the write protect switch (unprotect)
- How to care for and clean cartridges
- How to order cartridges and labels
- Other:

Using the Library

When the customer is ready to use the library for operation, they must:

- Make sure that an audit has been performed.
- Enter system commands to place all drives online.
- Enter system commands to place the library online.
- Refer to the management software publications for the command syntax and console entries.

Obtaining Support

Familiarize operators with the troubleshooting procedures in both the *SL3000 User's Guide* and the Library Console (**Help** ⇨ **Troubleshooting**).

- Review these procedures with the customer.
- Describe how to access documentation at:
<http://docs.sun.com/app/docs>

To find more information about the full range of support services, visit or call:

- www.storagetek.com/support.html
- 1.800.872.4786 (1.800.USA.4SUN)
- 1.800.722.4786 -- Canada
- www.sun.com/service/contacting/solution.html for international sites (countries listed)

Addressing and Panel Numbering

	Center						Line					
							Optional Drives	Standard Drives				
Rear Wall	0	2	4	6	8	10	12	14	16	18	20	22
Module	AEM	CEM	CEM	CEM	CEM	DEM	Base	CEM	CEM	CEM	CEM	AEM
Front Wall	1	3	5	7	9	11	13	15	17	19	21	23

Front Access Doors

The above figure is an example of how the SL3000 uses *CenterLine Technology* to help balance the workload and improve performance. Using the left side of the Base module as the centerline, *modules* can be added either to the left and/or to the right.

Numbering Schemes

- Describe the numbering scheme for the library, rails, columns, slots, walls, and tape drives.

The SL3000 uses five parameters:
Library, Rail, Column, Side, and Row

Library	There is only one library in a complex. This parameter will always be 1.
Rail	The SL3000 has only one rail. This parameter will always be 1.
Column	Columns indicate the horizontal location of a cartridge or drive from the centerline of the library. <ul style="list-style-type: none"> Minus sign (-) locations left of center. Plus sign (+ or nothing) locations right of center. Each module has 6 columns of cartridge arrays.
Side	Rear wall is 1; Front wall is 2
Row	Variable (1 to 52) Rows indicate the vertical location of a cartridge or drive. These are always positive numbers (1 to 52).

SCSI Element Numbering

- Storage Elements (slots)—**Top to bottom**, then **left to right**, and **rear wall to front wall**.
- Import/Export Elements (CAPs)—**Top to bottom**, then **left to right**.

Note – Storage and Import/Export elements are numbered sequentially by slot. No slots are skipped.

- Data Transfer Elements (drives)—**Left to right**, then **top to bottom**, starts at the centerline in the Base module and continues to the DEM if installed.

This numbering scheme allows you to add a bank of drives and not disturb the ordering of the drives above.

Internal Slot Default Numbering

- Starts** in the **upper left** slot on the **rear wall** of the first module to the left.
Counts from **top to bottom** and **left to right**.
- When the numbering reaches the last slot on the rear wall it *crosses* sides. Then *continues* at the **upper left** slot on the **front wall** of the first module.
Counts from **top to bottom** and **left to right**.
- Ends** at the lower slot, front wall, of the last module.

Tape Drive Default Numbering

- Starts** in the **upper left** slot of the first drive bay in the Base module.
Counts from **left to right** then from **top to bottom**, opposite that of the slot numbering.
- When the numbering reaches the last drive in the Base module, it crosses to the drive expansion module if installed. Then continues at the **upper left** slot in the first drive bay in the DEM.
Counts from **left to right** then from **top to bottom**.
- Ends** at the lower right slot, last drive, in the DEM.

Network Configurations

- Verify the settings with the systems administrators

Item	Description	Customer Info.
Library name	Assign a <i>name</i> for network access, up to 11 characters <i>Example: PRD3000A</i>	
Library IP Address	Enter the network address <i>Example: 128.80.70.120</i>	
Subnet mask	Allows the library to be accessible on a larger network <i>Example: 128.80.14.254</i>	
Gateway (optional)	Allows devices on one subnet to access another subnet <i>Example: 128.80.260.123</i>	

StorageTek Library Console

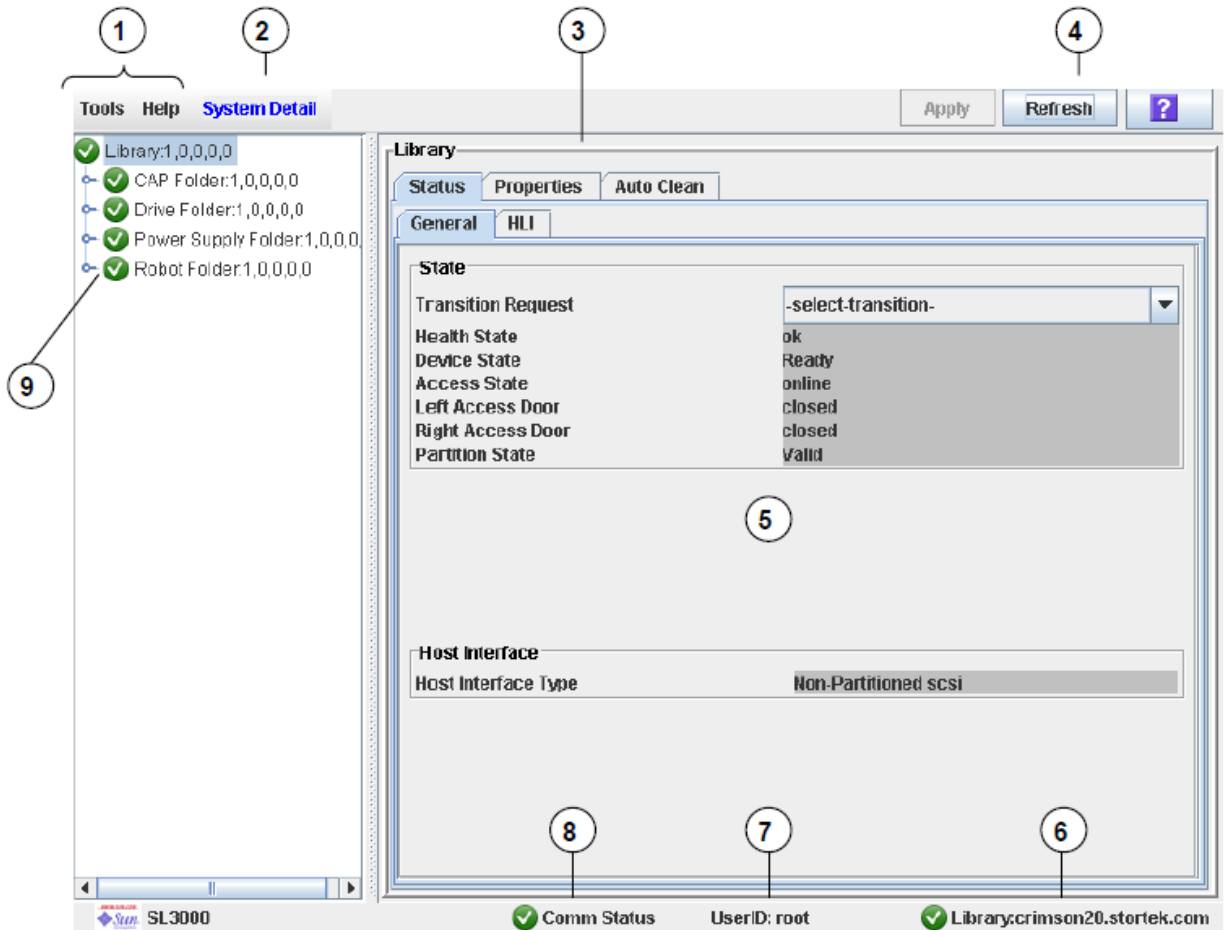
The StorageTek Library Console (SLConsole) is a Java-based software application that provides a graphical user interface (GUI) for monitoring and managing the SL3000 library.

You can use the console in three ways:

- o Local on the Touch Screen Operator Panel
- o Remotely on a PC or workstation
- o Web-launched

Operations you can perform include:

- o Perform audits, self-tests, diagnostic moves, and download firmware
- o View and modify status/properties of the library and devices
- o Display event logs, error descriptions, and contact sensitive help
- o Locate and move cartridges

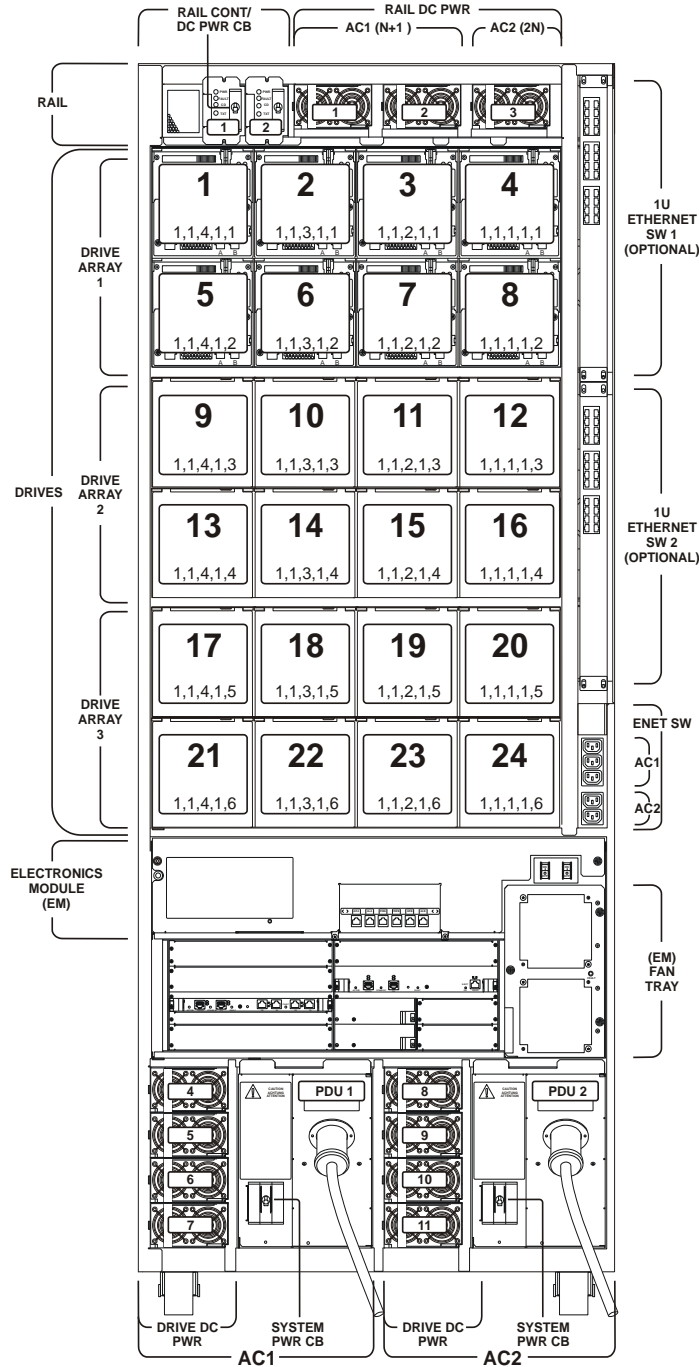


#	Component Name	Description
1	Menu bar—includes the Tools Menu and the Help Menu (Currently on System Detail)	Tools menu provides access to System Detail, Reports, Monitors, Utilities, Partitioning, User Management, and Log off functions. Help menu provides access to the table of contents of the help system. It also identifies the version of the SL Console in use.
2	Title bar	Displays the Menu title of the current screen.
3	Function tabs	Identifies the available functions for a screen.
4	Options bar	Location of buttons related to the screen (for example, Apply , Refresh , Print). Always includes the SL Console Help button (?)
5	Work / Display area	Location of the screen data.
6	Library health indicator	Identifies the library to which the SL Console is connected, and displays a graphical representation of the library health.
7	UserID indicator	Displays the user ID currently logged in to the SL Console.
8	Server communication health indicator	Displays a graphical heartbeat that indicates the state of server communication health.
9	Device tree	Lists and Displays the devices included in the library (expandable).

Base Module

1. Complete the information for both the Base module and the Drive Expansion Module (following page).
2. Identify the type of tape drive and interface for each drive. *Example: T10K B, FC* (T10000 B, Fibre Channel)
3. Using the account log, complete this information for operator referral.

Base Module (BM)



Robot Configuration?

N+1 2N N+1/2N

Ethernet Switches?

Yes No

Tape Drive Type:

1 _____
2 _____
3 _____
4 _____

5 _____
6 _____
7 _____
8 _____

Tape Drive Type:

9 _____
10 _____
11 _____
12 _____

13 _____
14 _____
15 _____
16 _____

Tape Drive Type:

17 _____
18 _____
19 _____
20 _____

21 _____
22 _____
23 _____
24 _____

Interface Type?

Single TCP/IP
 Dual TCP/IP
 Fibre Channel
 Partitioning (all)

Addresses

Power Configuration?

N+1 2N N+1/2N

Number of DCPS?

Branch Circuit Location

N+1

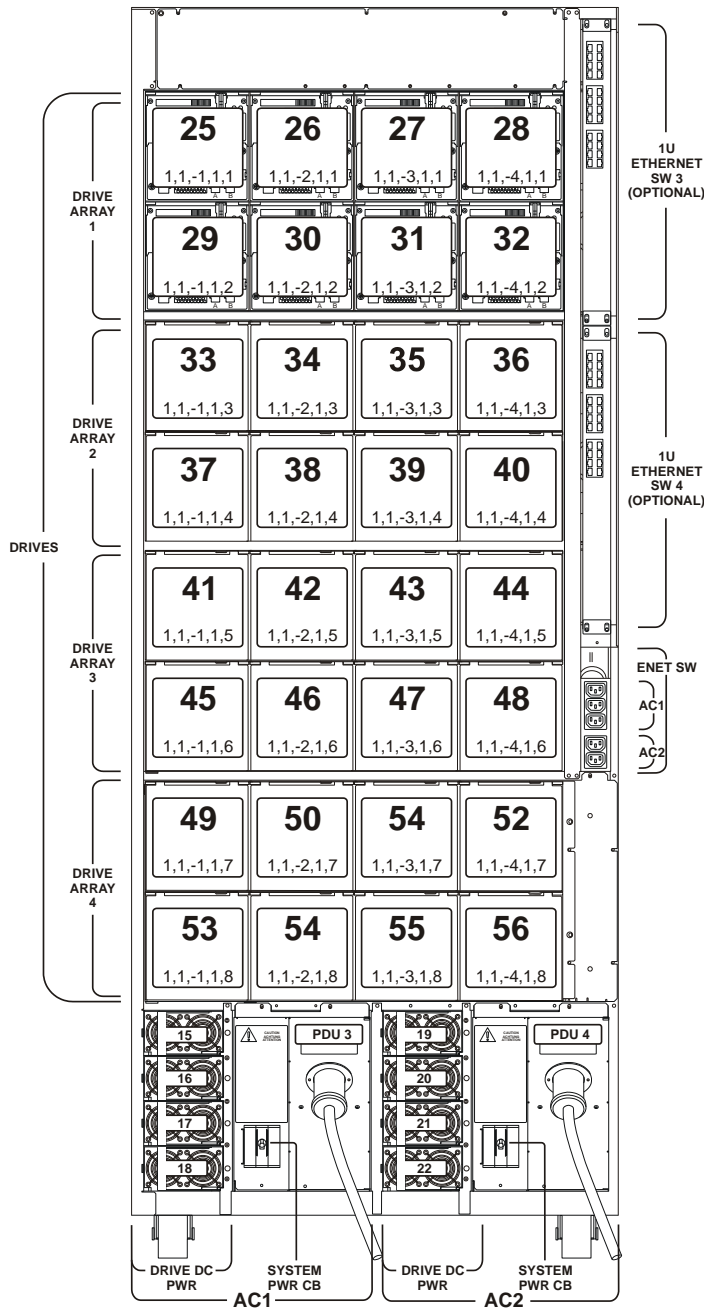
2N

L206_044

Notes:

Drive Expansion Module

Drive Expansion Module (DEM)



L206_045

Ethernet Switches?

Yes No

Tape Drive Type:

25 _____
 26 _____
 27 _____
 28 _____

29 _____
 30 _____
 31 _____
 32 _____

Tape Drive Type:

33 _____
 34 _____
 35 _____
 36 _____

37 _____
 38 _____
 39 _____
 40 _____

Tape Drive Type:

41 _____
 42 _____
 43 _____
 44 _____

45 _____
 46 _____
 47 _____
 48 _____

Tape Drive Type:

49 _____
 50 _____
 51 _____
 52 _____

53 _____
 54 _____
 55 _____
 56 _____

Power Configuration?

N+1 2N N+1/2N

Number of DCPS?

Branch Circuit Location

N+1

2N

Notes:

Specifications

Mechanical:

Measurement	Minimum ¹	Maximum ²
Height	77.45 in.	78.95 in.
Width	48.95 in.	48.95 in.
Length	30.23 in. ³	187.14 in. ⁴
Weight	796 lb	6100 lb ⁵

¹ Minimum = Base Module only
² Maximum = Six modules
³ Individual module width without side covers.
⁴ Side covers measure 2.90 in. plus gasket.
⁵ Six modules, fully loaded, with drives and media
Note:
 Initial maximum configurations use 6 modules, future offerings will extend to 12 modules

Environmental:

Measurement	Operating ¹	Non-operating
Temperature	60° to 90°F	40° to 90°F
Relative Humidity	20 to 80 %	20 to 80 %

Power:

Voltage	100-127 VAC 50-60 Hz Single phase 20 Amp service
	220-240 VAC 50-60 Hz Single phase 30 Amp service

Support for N+1, 2N, and N+1 and 2N configurations

Power Consumption and Dissipation varies by configuration

Service Clearances:

Measurement	Minimum	Recommended
Front	17.51 in.	24 in.
Rear	31.62 in.	35.55 in.
Side	2 in.	> 2 in.
Overall width	98.08 in.	126 in.
Overall length	Variable	Variable
Future (front)	21.82 in.	24 in.

Drives and Media

Performance:

Tape Drive	Minimum ¹	Maximum ²
T10000 A 2Gb	0.864 TB/hr	24.19 TB/hr
T10000 A 4Gb	0.864 TB/hr	24.19 TB/hr
T10000 B 4Gb	0.864 TB/hr	24.19 TB/hr
T9840C	0.216 TB/hr	6.05 TB/hr
T9840D *	0.216 TB/hr	6.05 TB/hr
LTO3	0.576 TB/hr	16.13 TB/hr
LTO4	0.864 TB/hr	24.19 TB/hr

¹Minimum = 2 tape drives
²Maximum = 56 tape drives
 Native throughput per hour uncompressed
 * = Encryption-capable: Key Management System

Cartridge Weights

Cartridge	Weight
T10000	9.4 oz / 0.586 lb
T9840	9.0 oz / 0.562 lb
LTO	7.2 oz / 0.452 lb

Drive Tray Weights

Tape Drive	Weight	With Drive Tray
T10000	11.25 lb	23.0 lb
T9840	8.5 lb	21.0 lb
LTO-IBM	5.5 lb	18.9 lb
LTO-HP	5.3 lb	18.8 lb

Regulatory Compliance:

Safety	UL 1950; CAN/CSA 22.2 No. 950; EN60950
Emissions	FCC 47 CFR 15, Subpart B Class A; CE EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3 VCCI CISPR 22 Class A; Canada ICES-003 Class A
Immunity	European Union CE immunity standards CISPR24/EN55024

Access Expansion Module AEM:

Single CAP Capacity	(234)
Dual CAP Capacity	(468)
Installed Left	+104
Installed Right	0

* Required for Dual robotic operations.

Module Capacity

Base Module :

Configuration	Maximum
8 drives with CAP	421
16 drives with CAP	355
24 drives with CAP	283

Note:

- The Base module is required with every library configuration. Includes one 26- slot CAP using two 13-slot magazines.
- The Base module contains the power, logic, controls, and infrastructure for all other modules in the library.
- Maximum capacity requires modules to be installed to the left and to the right.
- The left slot of the last module on the left is inaccessible to attach the side cover unless an AEM is installed.

Drive Expansion Module DEM:

Configuration	CAP	No CAP
8 drives	421	498
16 drives	355	432
24 drives	283	360
32 drives	205	282

Note:

- The DEM expands the throughput by adding up to 56 tape drives.
- One Drive Expansion Module can be added to the *left side* only of the Base Module.
- The DEM can have an *optional* CAP.

Cartridge Expansion Module CEM:

Configuration	Left Module	Right Module
Without CAP	438	620
With CAP	516	542

Note:

- The CEM expands the cartridge capacity of the library.
- Cartridge Expansion Module can be added to either side; left or right

The CEM can have an *optional* CAP up to a maximum of 6 CAPs per library.

Parking Expansion Module PEM:

Installed in Pairs	Left = 308 Right = 312
Total for both	620

* Required for Dual robotic operations.



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