adic Intelligent Storage™

FastStor 2™ User's Guide

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Contents

1

About This Guide and Your Product

This guide contains information and instructions necessary for the normal operation and management of the FastStor 2. This guide is intended for anyone interested in learning about or anyone that needs to know how to install, configure, and operate the FastStor 2.

Note — Be sure to read all operating instructions in this manual and in the *System, Safety, and Regulatory Information Guide* before operating this product.

Product Safety Statements

This product is designed for processing magnetic tape cartridges. Any other application is not considered the intended use. ADIC will not be held liable for damage arising from unauthorized use of the product. The user assumes all risk in this aspect.

This unit is engineered and manufactured to meet all safety and regulatory requirements. Be aware that improper use may result in bodily injury, damage to the equipment, or interference with other equipment.

WARNING — **BEFORE POWERING ON OR USING THIS EQUIPMENT, READ THE *SYSTEM, SAFETY, AND REGULATORY INFORMATION GUIDE*. KEEP THE GUIDE FOR FUTURE REFERENCE.**

Product Model Number

The product model number is as follows: FastStor 2.1

Explanation of Symbols and Notes

The following symbols appear throughout this document to highlight important information.

WARNING — **INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR BODILY INJURY.**

CAUTION **Indicates a situation that may cause possible damage to equipment, loss of data, or interference with other equipment.**

Note Indicates important information that helps you make better use of your system.

Other Documents you Might Need

The following document is available for this product. It can be found at www.adic.com/manuals:

- FastStor 2 User's Guide (6-00515-*xx*)

Note Release Notes are also available for this product. The Release Notes describe changes to your system or firmware since the last release, provide compatibility information, and discuss any known issues and workarounds. The Release Notes can be found at www.adic.com/manuals.

Getting More Information or Help

More information about this product is available on the Customer Service Center website at www.adic.com/csc. The Customer Service Center contains a collection of information, including answers to frequently asked questions (FAQs). You can also access software, firmware, and drivers through this site.

For further assistance, or if training is desired, contact ADIC:

In the USA:	800-827-3822
In Europe and Japan:	00-800-9999-3822
For additional contact information:	www.adic.com/contact
To open a Service Request:	www.adic.com/techsup

2

Description

Your autoloader provides automated data storage, archival, backup, and retrieval for a range of systems from desktop workstations to small office local area networks to storage area networks. The standard product is designed for use in a general office environment, and has a fully finished appearance for use on a desktop; however, it can be installed easily into a rack.

The autoloader contains one drive and 8 fixed storage locations for tape media. There is a single slot door located on the front of the autoloader for inserting and removing tapes. A carousel mechanism is used to move tape within the autoloader, and a robotic picker is used to either move a tape from the carousel to the drive, or from the carousel to the media access door. There is an operator panel located on the front of the unit for operator interface. The unit is also equipped with a Remote Management Unit (RMU), which provides remote autoloader operation through a web browser.

It is compatible with most operating systems and environments that support the SCSI interface, but requires either direct support from the operating system or a compatible backup application to take full advantage of its many features. For specific information about your autoloader, including autoloader capacity, drive information, and physical size, see Specifications on page 59.

Features

Your autoloader has the following features:

- **Multi-function Operator Panel**—The autoloader operator panel consists of four LEDs, four buttons, and an LCD screen. The operator panel provides everything you need to monitor autoloader status and to control all of its functions.
- **Remote Management Access**—With the RMU you can connect to your autoloader over Ethernet and use your web browser to manage operations. All available functions are accessible without the need of a dedicated or separate software.
- **Cleaning Cartridge**—Although the cleaning cartridge can occupy a cartridge storage slot in the autoloader (facilitating automated cleaning cycles), manual insertion of a cleaning cartridge is permitted by importing the cleaning cartridge through the operator panel.
- **Cartridge Pre-Check**—Whenever you power up your autoloader, it will scan the cartridge storage slots and the drive and then build a log of valid cartridge locations.
- **Reverse Cartridge Protection**—The import/export cartridge storage slot is designed to prevent the cartridges from being inserted incorrectly.
- **Built-in Diagnostics**—Your autoloader includes diagnostic firmware that tells you when drive head cleaning is required, reports diagnostic results, and drive operating status.
- **Barcode Reader**—The barcode reader delivers instant media verification and inventory.

- **Rackmount Ready**—The available rackmount kit enables you to rackmount your autoloader in 2U of rack space.
- **Independent SCSI Buses**—The autoloader and the tape drive each include independent Small Computer System Interface (SCSI) controllers. Each supports independent sets of SCSI messages and commands. The autoloader and the enclosed tape drive use a wide, low-voltage differential (LVD) SCSI interface.
- **Bulk Cartridge Exchange**—This option enables a user to sequentially import or export a complete set of cartridges.

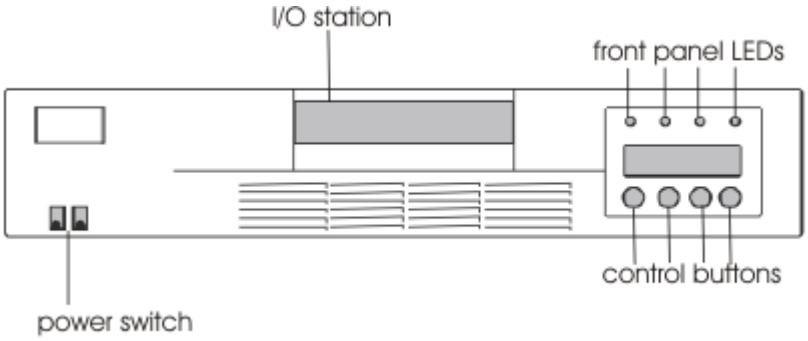
Switches and Indicators

The following topic illustrates the front, rear, and other operation components for your autoloader.

Front Panel

Familiarize yourself with the front panel components shown in Figure 1.

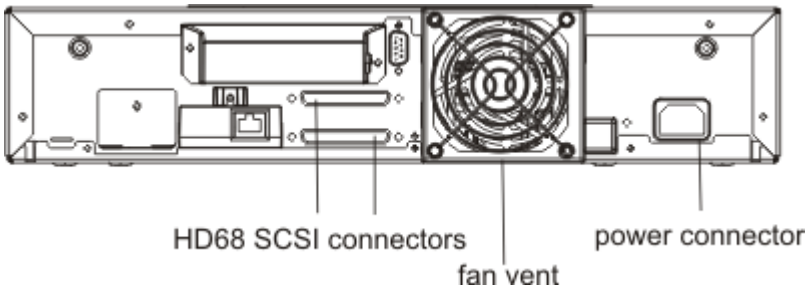
Figure 1 Autoloader Front Panel



Rear Panel

Familiarize yourself with the rear panel components shown in Figure 2.

Figure 2 Autoloader Rear Panel



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Getting Started

This section describes how to install and set up your autoloader.

Unpacking and Inspecting

Before you begin, clear a desk or table so that you can unpack the autoloader.

CAUTION: **If the room in which you are working differs from the temperature in which the autoloader was shipped or stored by 30° F (15° C) or more, let the autoloader acclimate to the surrounding environment for at least 12 hours before opening the shipping carton.**

Checking the Accessories

The autoloader equipment box includes the following items:

- 1 US power cord
- 1 European power cord
- 1 SCSI Ultra 2 LVD Multimode Terminator
- Barcode Reader assembly

Unpacking the Autoloader

Follow the directions below to unpack the autoloader.

1. Clear a table or desk so that you have room to unpack the autoloader.
2. Inspect the shipping box for damage. If you notice any damage, report it to the shipping company immediately.
3. Open the shipping box and remove the accessories package. Set the accessories package aside for now.
4. Lift the autoloader and padding out of the box and place it on the work surface, top facing up.

CAUTION: **Do not set the autoloader on its end or side.**

5 Carefully remove the shipping padding from the left and right sides of the autoloader. Then remove the bag from the autoloader.

NOTE: Save the packing materials in case you need to move or ship the autoloader in the future.

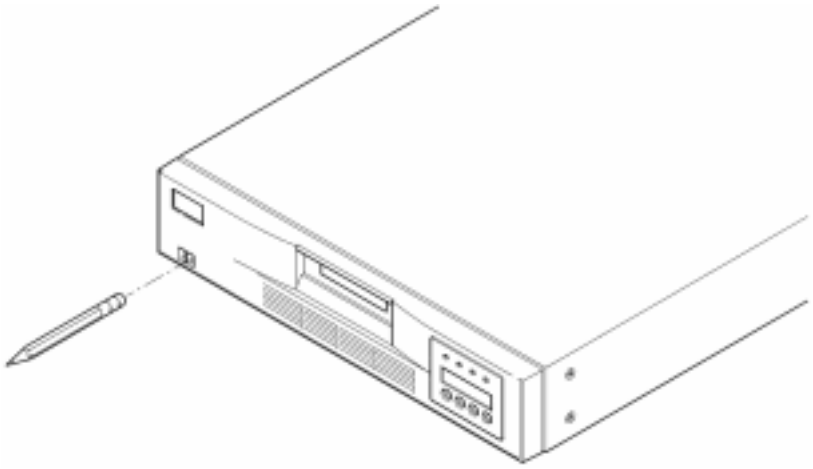
Installing the Barcode Reader

CAUTION: To avoid electrostatic discharge damage to the unit, touch the autoloader's metal case or rear panel before installing the barcode reader.

Mount the barcode reader on the rear panel of the autoloader.

1 If you are installing the barcode reader into a previously installed and configured autoloader and the autoloader power is on, power it off as follows:

a. Use the tip of a pen to press the OFF switch as shown below:



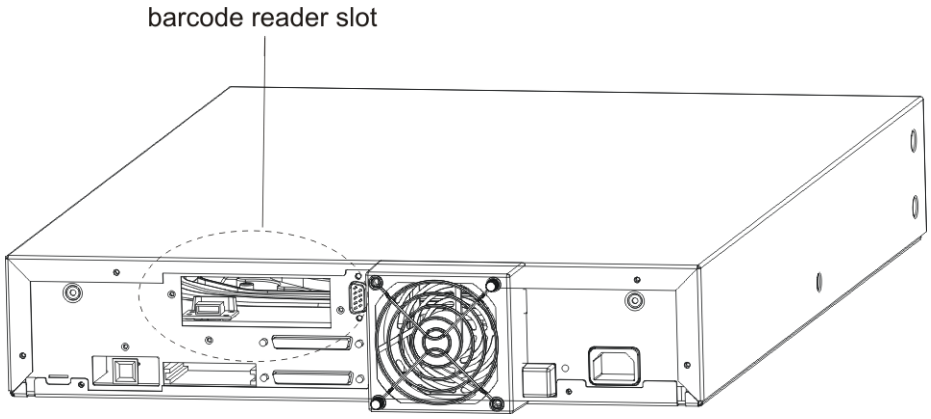
CAUTION: Pressing the OFF switch stops the autoloader from functioning, but it does not remove power from the autoloader. To remove power, you must disconnect the power cord from the power source.

b. Unplug the power cord from the outlet.

c. Unplug the power cord from the rear panel of the autoloader.

d. Disconnect the SCSI cables from the rear panel of the autoloader.

2 Remove the cover plate from barcode reader slot on the rear panel. Save the screws. Save and store the cover plate; you may use this plate later after removing the barcode reader.



3 Orient the barcode reader before the slot. There is only one correct orientation. Check whether the holes align.

4 Connect the cable to the barcode controller outlet.

5 Attach the barcode reader with the screws that you removed from the cover plate.

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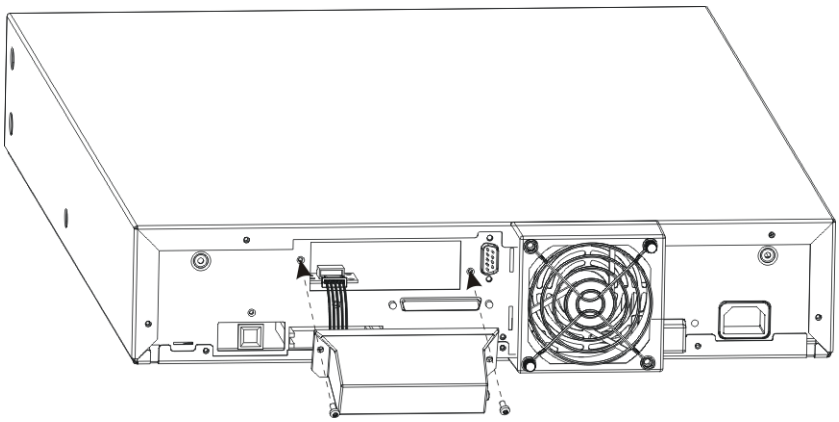


6 If you have installed the barcode reader into a previously installed and configured autoloader and you want to restore power, power it on as follows. Otherwise continue to Choosing an Installation Location on page 8.

   a. Reconnect the SCSI cables to the rear panel of the autoloader.

   b. Plug the power cord into the outlet.

   c. Plug the power cord into the rear panel of the autoloader.

   d. Use the tip of a pen to press the ON switch.

7 Check the LCD display to make sure the autoloader is receiving power. If it is not, check the power connections and your power source. During the Power-On Self Test (POST), all four LEDs are illuminated briefly, followed by just the Ready/Activity LED flashing. When the initialization sequence is complete, the LCD screen displays the main menu.

Choosing an Installation Location

Choose an installation location that meets the criteria in Table 1. See Specifications on page 59 for more information about autoloader specifications.

NOTE: If you are installing the autoloader in a rack, follow the instructions in the rackmount kit before continuing to Autoloader SCSI Connections on page 9.

Table 1 Location Criteria

Requirement	Criteria
Standalone requirements	Select a location that is flat, sturdy, level, and close to a host system server. Do not place the autoloader on the floor or other carpeted surfaces. **CAUTION: Do not place the autoloader on its side or upside down or stack items that weigh more than 5 KG (11.02 lbs) on top of the autoloader.**
Room temperature	10-35º C (50-95º F)
Power source	AC power voltage: 100-127 VAC; 200-240 VAC Line frequency: 50-60 Hz. NOTE: Locate the AC outlet near the autoloader. The AC power cord is the product's main AC disconnect device and must be easily accessible at all times.
Weight	26 lbs (12 kg)
Air quality	Minimal sources of particulate contamination. Avoid areas near frequently used doors and walkways, stacks of supplies that collect dust, printers, and smoke-filled rooms. **CAUTION: Excessive dust and debris can damage tapes and tape drives.**
Humidity	20-80% RH
Clearance	Back Minimum of 15.4 cm (6 inches) Front Minimum of 30.8 cm (12 inches) Sides Minimum of 5.08 cm (2 inches)

Preparing the Host System

At this point you need to refer to your software installation guide for instructions on installing the backup/ controlling software for the autoloader onto the host system. Read through the SCSI Host System Adapter and Connection Guidelines before installing the software.

SCSI Host System Adapter and Connection Guidelines

If necessary, install a SCSI host system adapter, software, and compatible driver(s). Refer to the manuals for the host system and SCSI host system adapter for detailed instructions. In addition, follow these general guidelines:

- Make sure that your backup application supports the SCSI host system adapter.
  Depending on the server configuration, you may need to change the SCSI IDs of the autoloader (see Viewing or Changing the SCSI IDs).
- Make sure that the host server system has an open expansion slot.
- If the host server system is connected to a network, check with the system administrator before turning off power.
- Use proper procedures to prevent electrostatic discharge (ESD). Use wrist-grounding straps and anti-static mats when handling internal components.

NOTE: The LVD host system bus adapter is recommended. A single ended SCSI host system bus adapter does work, but can severely degrade performance. Also, if there are any SE devices on the same SCSI bus, the entire SCSI bus negotiates down to SE speed and can severely degrade performance.

Autoloader SCSI Connections

The autoloader incorporates a wide SCSI-2, Low-Voltage Differential (LVD) SCSI bus, but may also be attached to a Single-Ended (SE) SCSI bus. Make sure your SCSI host system adapter or controller supports these standards. If you connect the autoloader to the SE SCSI bus or if there are SE devices attached to the same SCSI bus, the autoloader's performance is limited to the maximum data transfer speed and maximum cable lengths of the SE bus.

The autoloader is NOT compatible with a standard differential (Diff) or High-Voltage Differential (HVD) SCSI bus. The autoloader is compatible with a narrow (50-pin) SCSI bus using a 68-pin to 50-pin adapter that terminates the unused 18 pins. These adapters are sometimes labeled high-byte termination.

Connecting SCSI and Power Cables

The following describes how to connect the SCSI and power cables.

NOTE: The autoloader is an Ultra-2 Wide device. Only use cables and terminators specified for Ultra-2 use or labeled as MultiMode.

1 Shut down and turn off the selected server. Turn off all attached devices, such as printers and other SCSI devices. Remove the power cables from the server and all attached accessories.

CAUTION: Failure to remove the power cables from these devices could result in damage to the autoloader.

2 Attach one end of the SCSI cable to one of the connectors on the rear panel of the autoloader.

3 Attach the other end of the SCSI cable to the connector on the SCSI host system bus adapter or to the connector on the previous device on the SCSI bus.

NOTE: If the SCSI cable does not fit the connector on your SCSI host system adapter, you either have an incompatible SCSI host system adapter or you need to purchase a cable adapter, or a different cable. Contact your service representative or your SCSI host system adapter manufacturer for information.

4 Do one of the following:

- If the autoloader is the last or only device on the SCSI bus, attach the terminator to the remaining SCSI connector on the rear panel of the autoloader.
- Otherwise, attach the cable to the next device on the SCSI bus. Make sure that the last device on the SCSI bus is properly terminated.

5 Power on the autoloader as follows:

a. Plug the power cord into the outlet.

b. Plug the power cord into the rear panel of the autoloader.

c. Use the tip of a pen to press the ON switch.

6 Check the LCD display to make sure the autoloader is receiving power. If it is not, check the power connections and your power source. During the Power-On Self Test (POST), all four LEDs are illuminated briefly, followed by just the Ready/Activity LED flashing. When the initialization sequence is complete, the LCD screen displays the main menu.

7 Turn on any other devices you turned off earlier, and then turn on the server.

8 Verify the connection between the autoloader and host system by making sure that the host server system's operating system recognizes the autoloader:

- In Windows 2000™: Settings -> Control Panel -> System -> Hardware -> Device Manager -> Tape Drive and/or Media Changer
- In Windows 2003™: Settings -> Control Panel -> System -> Hardware -> Device Manager -> Tape Drive and/or Media Changer

For more information on verifying the connection of SCSI devices, consult the operating system documentation.

Connecting More than one Autoloader

If you are connecting more than one autoloader on the same SCSI channel, connect each unit to the previous unit with an additional shielded interface cable. It does not matter which SCSI connector on each autoloader you connect the interface cable to. Each SCSI ID comes predefined with each autoloader. Make sure that you configure each autoloader unit with its unique drive SCSI ID and autoloader ID. Your autoloaders will not function properly if they have the same SCSI IDs. See Viewing or Changing the SCSI IDs. Also, ensure that you terminate the last device in the chain.

4

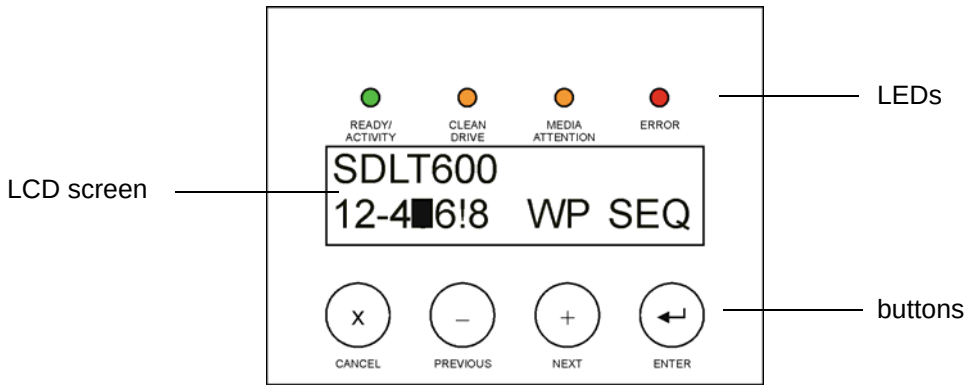
Operating the Autoloader

This topic discusses how to operate the autoloader components.

Operator Panel

The operator panel consists of a liquid crystal display (LCD) screen, four LEDs, and four buttons. The operator panel provides everything you need to monitor autoloader status and to control all of its functions.

Figure 3 Operator Control Panel



LCD Screen

The display defaults to the main menu. The main menu consists of the autoloader status on the top line and the current cartridge inventory on the second line. The autoloader status line indicates the current operation. The cartridge inventory indicates the status of cartridge slots as follows:

- Full slots are indicated by the slot number.
- Empty slots are indicated by a dash (-).
- If a cartridge is currently loaded in the drive, the display alternates the number of the home position for that cartridge with a black block.
- An exclamation point (!) indicates that the autoloader has identified a cartridge that is either an invalid type or has had a media-related error. The Media Attention LED indicator is also illuminated in this case. Refer to LED Indicators on page 12 for more information.

NOTE: “SEQ” appears when the autoloader is in sequential mode.
“WP” appears when a write-protected cartridge is loaded into the tape drive.

LED Indicators

The operator panel includes four LED indicators that provide a variety of information as detailed in the following table.

Table 2 LED Indicators

LED	Color	Description
Ready/Activity	Green	Illuminated when power is on. Blinking whenever there is tape drive or autoloader robotics activity.
Clean Drive	Amber	Illuminated when the tape drive has determined that a cleaning cartridge should be used (see Cleaning the Tape Drive on page 19). Additional cleaning of the tape drive is not necessary.
Media Attention	Amber	Illuminated if the tape drive has detected a cartridge or tape fault. Recommended action is to export the cartridge from the autoloader. Doing so turns off the LED (see Exporting Cartridges on page 17). If a particular cartridge causes these symptoms repeatedly, that cartridge may be defective. For more information, see the following sections of Table 4, Troubleshooting Table: Media on page 41 and Media Attention LED Issues on page 43.
Error	Red	Illuminated if an unrecoverable tape drive or autoloader error occurs. A corresponding error message appears on the LCD screen (see Viewing Autoloader Error Codes on page 47).

Control Buttons

The operator panel includes four buttons that provide access to all operations and information menus. Table 3 on page 12 describes each control button function.

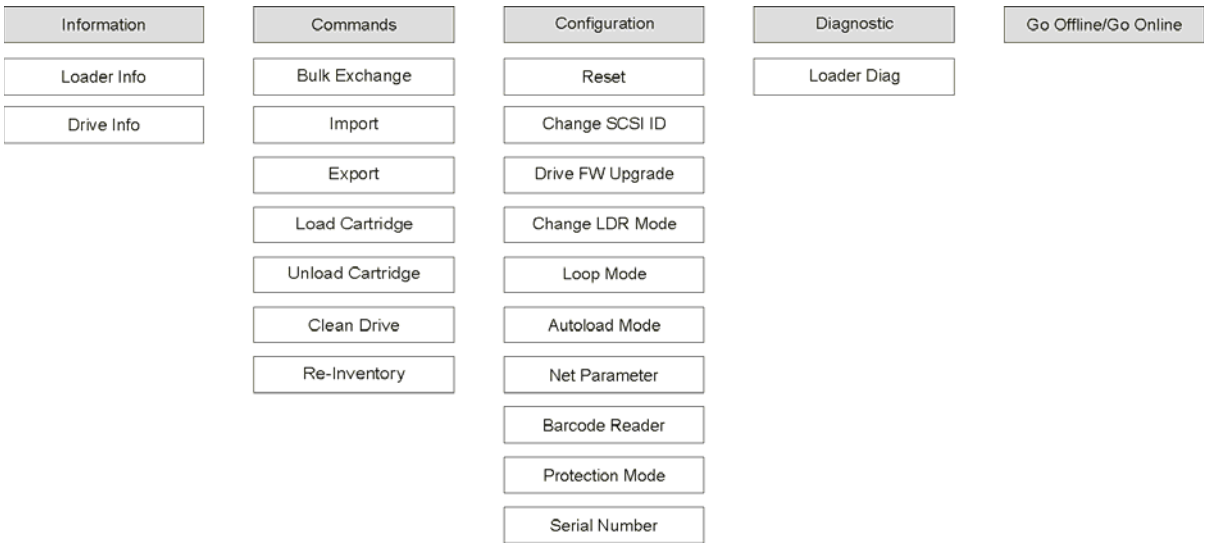
Table 3 Control Buttons

Button	Description
Cancel	Cancels the current menu option and returns to the previous menu level or main menu.
Previous	Selects the previous item or value in the currently displayed menu.
Next	Selects the next item or value in the currently displayed menu.
Enter	Executes the current menu or selects the current option displayed on the LCD panel.

Understanding the Menu Structure

The following graphic depicts the autoloader menu structure.

Figure 4 Operator Panel Menu Structure

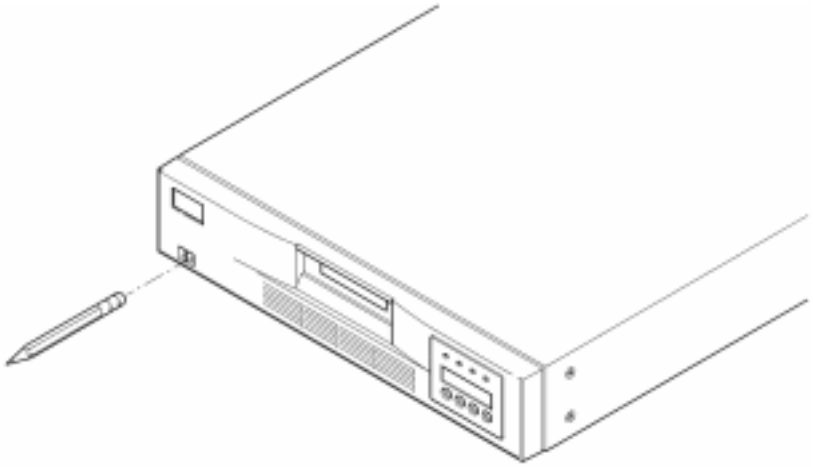


Powering on the Autoloader

1 Plug the power cord into the outlet.

2 Plug the power cord into the rear panel of the autoloader.

3 Use the tip of a pen to press the ON switch as shown below:



4 Check the LCD display to make sure the autoloader is receiving power. If it is not, check the power connections and your power source. During the Power-On Self Test (POST), all four LEDs are illuminated briefly, followed by just the Ready/Activity LED flashing. When the initialization sequence is complete, the LCD screen displays the main menu.

Configuring the Barcode Reader

If you have just installed a barcode reader, use the operator panel to configure it.

1 From the main menu, press **+** or **–** until **Go offline** appears. Press **ENTER**.

1 Press **+** or **–** until **Configuration** appears. Press **ENTER**.

2 Press **+** or **–** until **Barcode Reader OFF** appears. Press **ENTER**.

3 Press **+** or **–** until **BCR CHANGE TO: ON** appears. Press **ENTER**.

The *Enable BCR* message appears on the operator panel. Then the barcode reader scans all slots. After the barcode reader is enabled, the autoloader and the host system sense its presence. Operationally, the barcode reader is controlled by the host software.

Configuring the Remote Management Unit

Before you configure the RMU, obtain a valid IP address from your system administrator and use an Ethernet cable to connect the Ethernet port on the back of the RMU to an Ethernet port on a working network.

In order for the RMU to function properly, the system running your web browser must be set to accept cookies.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

2 Press **+** or **–** until **Configuration** appears. Press **ENTER**.

3 Press **+** or **–** until **Net Parameters** appears. Press **ENTER**.

4 Press **+** or **–** until **Network OFF** appears. Press **ENTER**.

5 Press **+** to change the display to **Network CHANGE TO: ON.** Press **ENTER**.

6 Press **+** or **–** until **DHCP OFF** appears.

- If you are using DHCP, press **ENTER**. Press **+** or **–** until **DHCP CHANGE TO: ON** appears. Press **ENTER**. Press **CANCEL** to move back up the menu tree.You are prompted to cycle power. For information, refer to Powering on the Autoloader on page 13. Exit this procedure.
- If you are not using DHCP, continue with step 7 on page 4-14.

7 Press **+** or **–** until **IP Address** appears. Press **ENTER**.

The cursor defaults to the first digit of the default IP address “000.000.000”.

8 Configure each digit of the IP address:

- Press **ENTER** to retain the “0”
- Press **+** to increment the digit
- Press **–** to decrement the digit.

When the IP address is correct, press **ENTER**. If your Ethernet network does not require a network gateway or network mask, continue with step 11 on page 4-15.

9 If your Ethernet network requires a network gateway, press **+** or **–** until **GATEWAY ADDRESS** appears.

- Press **ENTER.** The cursor defaults to the first digit of the default gateway address “000.000.000”.
- Configure each digit of the gateway address:

- Press **ENTER** to retain the “0”
- Press **+** to increment the digit
- Press **–** to decrement the digit.

When the gateway address is correct, press **ENTER**.

10 If your Ethernet network requires a network mask, press **+** or **–** until **NETMASK** appears.

- Press **ENTER.** The cursor defaults to the first digit of the default subnet address “000.000.000”.
- Configure each digit of the network mask:
- Press **ENTER** to retain the “0”
- Press **+** to increment the digit
- Press **–** to decrement the digit.

When the network mask is correct, press **ENTER**.

11 Press **CANCEL** to move back up the menu tree.You are prompted to cycle power. For information, refer to Powering on the Autoloader on page 13.

The new settings cannot be used until the power is cycled.

Working with Data Cartridges

The following describes how to work with your data cartridges. For specific information about allowed autoloader data cartridges, see Specifications on page 59.

Write-Protecting Cartridges

All cartridges have a write-protect switch to prevent accidental erasure or overwriting of data. Before loading a cartridge into the autoloader, make sure the write-protect switch on the front of the cartridge is positioned as desired. Slide the switch to the right to write-protect the cartridge.

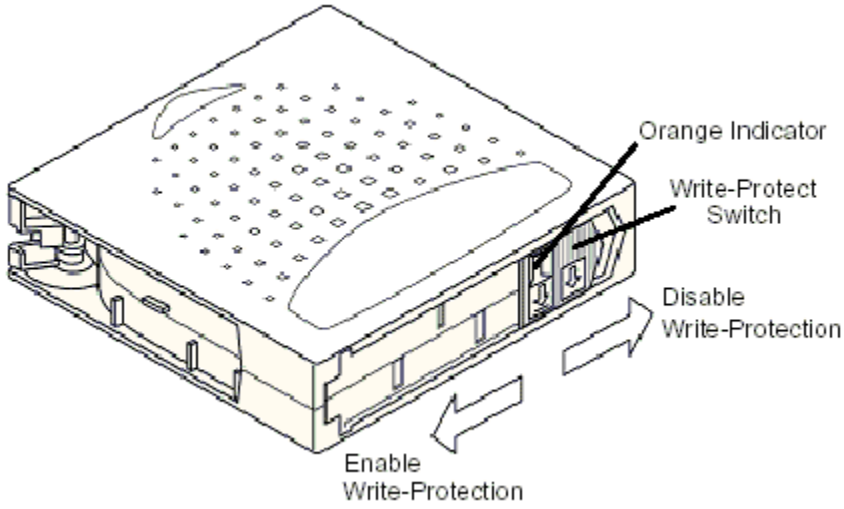
- For Super DLTtape II cartridges, an orange rectangle is visible when the cartridge is write-protected. See Figure 5 for the location of the switch on a Super DLTtape II data cartridge.

Slide the switch to the left to allow the autoloader to write updates to the tape.

- The write-protect switch displays a black void when the cartridge permits overwriting and erasure.

NOTE: When a write-protected cartridge is loaded into the drive, a WP appears on the bottom line of the LCD screen next to the inventory information. This message appears until the cartridge is unloaded from the drive.

Figure 5 Write-Protect Switch on a Super DLTtape II Cartridge



Importing Cartridges

This option commands the autoloader to import a cartridge into a specific empty slot on the carousel.

CAUTION: **Performing an import or export of media during a data backup may result in adverse results, which could include backup failure or other errors.**

1. Make sure the write-protect switch is set as desired for each data cartridge (see Write-Protecting Cartridges on page 15).
2. Press **+** or **–** until **Go offline** appears. Press **ENTER**.
3. Press **+** or **–** until **Commands** appears.
4. Press **ENTER** to access the available options.
5. Press **+** or **–** until **Import** appears. Press **ENTER**.
6. Press **+** or **–** until the desired slot number appears, and press **ENTER**.

   You are not given the option to import a cartridge to an occupied slot.
7. When **Insert Cartridge** appears and the mail slot opens, insert the desired data cartridge into the mail slot so that the write-protect switch is facing out from the autoloader.

   NOTE: If you are using the operator panel to clean the drive, import the cleaning cartridge only when the operator panel requests it. You may keep a cleaning cartridge in the autoloader if the backup software can manage the drive cleaning.
8. Repeat Step 6 and Step 7 as needed for any additional cartridges, and then press **CANCEL** when you are done importing cartridges.
9. Verify that the operator panel shows that the desired slots have cartridges installed.

Exporting Cartridges

This option moves a cartridge from a specific slot to the mail slot.

CAUTION: **Performing an import or export of media during a data backup may result in adverse results, which could include backup failure or other errors.**

1. Press **+** or **–** until **Go offline** appears. Press **ENTER**.
2. Press **+** or **–** until **Commands** appears. Press **ENTER**.
3. Press **+** or **–** until **Export** appears. Press **ENTER**.
4. Press **+** or **–** until the desired slot number appears. Press **ENTER**. You are not given the option to export from an empty slot, and you cannot export directly from the drive.
5. When **Remove Cartridge** appears and the cartridge is ejected through the mail slot, remove the exported cartridge from the autoloader, and press **ENTER**.
6. Repeat Step 4 and Step 5 as needed for any additional cartridges.
7. Press **CANCEL** when you are done exporting cartridges.
8. Make sure the operator panel indicates that the desired slots contain cartridges.

Using Bulk Exchange

This option enables a user to import or export a complete set of cartridges. The bulk exchange operation starts with slot 1 and cycles through all 8 slots, exporting cartridges that are present. The user has an opportunity to insert a new cartridge before pressing the **ENTER** key.

1. Press **+** or **–** until **Go offline** appears. Press **ENTER**.
2. Press **+** or **–** until **Commands** appears. Press **ENTER**.
3. Press **+** or **–** until **Bulk Exchange** appears. Press **ENTER**.

   The door opens. If there is a cartridge is Slot 1, it is exported. You are prompted to remove the cartridge. Insert a replacement cartridge if desired.
4. Press **ENTER**.

   The door opens. If there is a cartridge is Slot 2, it is exported. You are prompted to remove the cartridge. Insert a replacement cartridge if desired.

   This process repeats for slots 3 through 8.

Loading Cartridges

This option loads a cartridge from the autoloader slots into the tape drive.

1. Press **+** or **–** until **Go offline** appears. Press **ENTER**.
2. Press **+** or **–** until **Commands** appears. Press **ENTER**.
3. Press **+** or **–** until **Load Cartridge** appears.
4. Press **ENTER** to select.
5. Press **+** or **–** until the desired slot number appears, and press **ENTER**. The slot number you select indicates the cartridge to be loaded into the tape drive.

NOTE: Only slot numbers that contain cartridges are displayed.

While cartridges are loading, status messages appear on the operator panel. When the operation is complete, *Drive Stopped* appears.

6 Repeat for all cartridges you want to load (up to 8 cartridges).

Unloading Cartridges

This option unloads the cartridge from the tape drive into its original slot.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

2 Press **+** or **–** until **Commands** appears.

3 Press **ENTER** to select.

4 Press **+** or **–** until **Unload Cartridge** appears.

5 Press **ENTER** to unload the cartridge from the tape drive.

When the cartridge is unloading, status messages appear on the operator panel. When the operation is complete, *Drive Empty* appears.

6 Repeat for all cartridges you want to unload.

Re-Inventorying Cartridges

This option analyzes the slots and drives in the autoloader.

NOTE: This command is only needed if the inventory in the autoloader is different than the inventory displayed on the operator panel.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

1 Press **+** or **–** until **Commands** appears.

2 Press **ENTER** to access the available options.

3 Press **+** or **–** until **Re-inventory** appears.

4 Press **ENTER**.

The autoloader then checks the drive and each cartridge slot for the presence of a tape in order to update the inventory information.

Maintaining Cartridges

To ensure the longest possible life for all of your cartridges, follow these guidelines:

- Post procedures that describe proper media handling.
- Ensure that anyone who handles tape has been properly trained to handle it.
- Do not drop or strike a cartridge. Excessive shock can damage the internal contents of the cartridge, or the cartridge case itself, making that cartridge unusable.
- Do not expose your cartridges to direct sunlight or sources of heat, including portable heaters and heating ducts.
- Do not stack cartridges more than five high.

- For temperature and humidity ranges for Super DLTtape II cartridges, refer to Table 24 on page 61.
- If a cartridge has been exposed to temperatures outside the ranges specified above, stabilize the cartridge at room temperature for the same amount of time it was exposed to extreme temperatures or 24 hours, whichever is less.
- Do not place cartridges near sources of electromagnetic energy or strong magnetic fields, such as computer monitors, electric motors, speakers, or X-ray equipment. Exposure to electromagnetic energy or magnetic fields can destroy data and the embedded servo code, written on the media by the cartridge manufacturer, rendering the cartridge unusable.
- Place identification labels only in the designated slot on the cartridge.
- If you ship a cartridge, ship it in its original or better packaging.
- Do not insert damaged cartridges into the drive.
- Do not touch the tape or tape leader.
- Do not degauss a cartridge that you intend to reuse.

Cleaning the Tape Drive

When the Clean Drive LED is on, the autoloader's tape drive needs to be cleaned. Cleaning times can range from a few seconds to a few minutes during which time the Ready LED blinks. Use only authorized cleaning cartridges in the autoloader.

NOTE: If you are using the operator panel commands to clean the drive, import the cleaning cartridge only after you have selected **Clean Drive**. If you would like to keep a cleaning cartridge in the autoloader, the backup software must manage drive cleaning.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

1 Press **+** or **–** until **Commands** appears.

2 Press **ENTER**.

3 Press **+** or **–** until **Clean Drive** appears, and then press **ENTER**.

4 If the carousel is full, the operator panel displays the *No slot free for transfer* message. Press **CANCEL** repeatedly until the main menu is displayed. Export a cartridge to make room for the cleaning cartridge.

See Exporting Cartridges on page 17 for instructions then return to Step 1 to clean the tape drive.

5 Insert the cleaning cartridge into the autoloader mail slot. During the cleaning process, which can take several minutes, the operator panel displays the *Drive Cleaning* message.

CAUTION: If the cartridge is not a valid cleaning cartridge, the operator panel displays the *Invalid Tape* message and the cartridge will be exported.

6 When tape drive cleaning is complete, the Clean Drive LED indicator turns off (if previously on) and the autoloader unloads and exports the cleaning cartridge. Remove the cleaning cartridge, and press **ENTER** when the operator panel prompts you to do so.

NOTE: If the **Clean Drive** or **Media Attention** LED indicators illuminate when you insert another cartridge immediately after cleaning, then see Table 4 on page 40.

7 If you had to remove a data cartridge to import the cleaning cartridge, import the tape to its original slot. See Importing Cartridges on page 16 for more information.

5

Managing the Autoloader

This section discusses managing the autoloader, including resetting the autoloader, setting SCSI IDs, setting the autoloader mode, and updating firmware. You can also use the System Test (see Performing System Test on page 25) and the information retrieval tool (see Retrieving Information on page 26) to manage the autoloader.

Resetting the Autoloader

This option resets the autoloader robotics and the tape drive within the autoloader, forces a new cartridge inventory, and clears any current error condition.

NOTE: This option is primarily used if the autoloader is in an error state. However, any backups that have not been verified as complete should be considered lost.

1. Press **+** or **–** until **Go offline** appears. Press **ENTER**.
2. Press **+** or **–** until **Configuration** appears.
3. Press **ENTER** to select.
4. Press **+** or **–** until **Reset** appears.
5. Press **ENTER** to reset the autoloader.

   After initialization, the autoloader returns to normal operation and displays the main menu.

Viewing or Changing the SCSI IDs

Use this option to view or change the SCSI IDs used by the autoloader. The autoloader occupies two SCSI IDs, one ID is assigned to the autoloader and the second ID is assigned to the tape drive.

The default SCSI ID for the autoloader's SCSI controller is 0. The default SCSI ID for the tape drive is 5. You only need to change a SCSI ID if there is another device, or devices, already assigned to these IDs.

NOTE: If you changed the SCSI ID, you may also need to cycle power on the host system and reconfigure your backup software before you can use the autoloader. Consult your hardware and software manuals for more information.

Viewing or Changing the Autoloader SCSI ID

NOTE: This feature is not present for the LTO version of the FastStor 2.

Use the following procedure to view or to modify the autoloader SCSI ID.

1. Press **+** or **–** until **Go offline** appears. Press **ENTER**.
2. Press **+** or **–** until **Configuration** appears.
3. Press **ENTER** to select.
4. Press **+** or **–** until **Change SCSI ID** appears.
5. Press **ENTER** to select.
6. Press **+** or **–** until **Loader** appears on the operator panel and then press **ENTER** to select.
7. Press **+** or **–** until the desired SCSI ID is displayed. Press **ENTER**. Press **CANCEL** to view only.

   The *Cycle Power for New SCSI ID* message appears if you have made a change.
8. Turn off the autoloader. After a few seconds, turn it back on again.

   The selected SCSI ID is now in effect.

Viewing or Changing the Tape Drive SCSI ID

Use the following procedure to view or to modify the tape drive SCSI ID.

1. Press **+** or **–** until **Go offline** appears. Press **ENTER**.
2. Press **+** or **–** until **Configuration** appears.
3. Press **ENTER** to select.
4. Press **+** or **–** until **Change SCSI ID** appears.
5. Press **ENTER** to select.
6. Press **+** or **–** until **Drive** appears on the operator panel.
7. Press **ENTER** to select.
8. Press **+** or **–** until the desired SCSI ID is displayed, and then press **ENTER**. Press **CANCEL** to view only.

   The *Cycle Power for New SCSI ID* message appears if you have made a change.
9. Turn off the autoloader, and then after a few seconds, turn it back on again.

   The selected SCSI ID is now in effect.

Autoloader Operating Modes

The autoloader has operational modes that affect how the autoloader loads tapes into the drive.The operating mode is set based on whether you have automation software controlling cartridges in the autoloader or if you are manually loading and unloading cartridges using the autoloader operator panel controls.

The autoloader always operates in autodetect mode. In autodetect, the autoloader automatically assumes you are not using automation software to control cartridge or drive activity. This mode is called sequential mode. If the autoloader detects that the automation software is controlling tape drive activity, it automatically switches to random mode.

NOTE: “SEQ” appears next to the front panel inventory when the autoloader is in sequential mode. Nothing appears when the autoloader is in random mode.

Random Mode

This is the mode of operation when a backup software application is being used. In random mode, the autoloader does not automatically load tapes into the drive. Instead it waits for commands from the software. Your backup software must support autoloaders, which often requires the additional installation of an autoloader/library software module.

Sequential Mode

Sequential mode is useful when a software application is not available. In sequential mode, the autoloader automatically unloads and loads tapes from the drive. The operator determines the first tape to load by loading the desired tape into the tape drive using the autoloader operator panel controls (see Loading Cartridges for instructions). When the first tape is full or unloaded for any reason, the autoloader automatically removes the tape from the drive, puts it in its original slot, then loads the next available higher numbered slot. To further determine how you want tapes loaded into the autoloader's tape drive while in sequential mode, you can view or set loop and autoload options from the autoloader front panel, but only while in sequential mode.

Loop Mode On/Off

This option turns loop mode on or off, and is only available when in sequential mode. When loop mode is on, after the autoloader has cycled through all available cartridges, it then reloads the original first cartridge in the sequence. If loop mode is turned off and the last cartridge has been unloaded, the autoloader stops loading cartridges until you manually load another cartridge.

CAUTION: Use caution when choosing loop mode. This mode makes it possible to overwrite data previously written on cartridges.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

2 Press **+** or **–** until **Configuration** appears.

3 Press **ENTER** to select.

4 Press **+** or **-** until **Loop Mode** appears.

The second line on the LCD screen indicates the current status, either “On” or “Off.”

5 Press **ENTER**.

The operator panel indicates whether you are about to turn loop mode on or off.

6 Press **ENTER** to accept the change to loop mode, or press **CANCEL** to exit and not save the changes.

Autoload Mode On/Off

This option turns autoload mode on or off, and is only available when in sequential mode. When autoload mode is on, the autoloader automatically loads the cartridge from the lowest numbered full slot into the tape drive when the system is first turned on (first cartridge only). When autoload mode is off, you must load cartridges into the drive manually. This function is only applicable when you power up the system.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

2 Press **+** or **–** until **Configuration** appears.

3 Press **ENTER** to select.

4 Press **+** or **–** until **Autoload Mode** appears.

The second line on the LCD screen indicates the current status, either “On” or “Off.”

5 Press **ENTER**. The operator panel indicates whether you are about to turn autoload mode on or off.

6 Press **ENTER** to accept the change to autoload mode, or press **CANCEL** to exit and not save the changes.

Updating Firmware

You can update both drive and autoloader firmware. (The term “autoloader firmware” includes both the SCSI controller firmware and the robotics controller firmware.) To update firmware by means of the RMU, refer to Updating Firmware on page 37.

Using a Firmware Upgrade Tape

This option performs a firmware code update to the drive using a firmware upgrade tape previously created using a separate procedure.

NOTE: This code update operation assumes that the upgrade tape is imported as part of this procedure. Do not import the firmware update cartridge before starting this procedure.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

2 Press **+** or **–** until **Configuration** appears.

3 Press **ENTER** to select.

4 Press **+** or **–** until **DRIVE FW UPGRADE FROM FMR TAPE** appears, and then press **ENTER** to select.

5 If the carousel is full, do the following:

- When the operator panel displays the *No slot free for transfer* message, press **CANCEL** repeatedly until the main menu is displayed.
- Export a cartridge to make room for the firmware update cartridge (see Exporting Cartridges on page 17 for instructions), and then return to step 1 to update the firmware.

6 If the carousel is not full, do the following:

- The autoloader selects the first available slot and prompts you to insert the code update tape.

7 Insert the firmware upgrade tape into the mail slot.

8 During the firmware update, which can take several minutes, the *Drive SW update busy...* message appears. When firmware update is complete, the autoloader resets, then unloads and exports the code update cartridge. Remove the code update cartridge and press **ENTER** when the operator panel prompts you to do so.

9 If you exported a data cartridge to make room for the code update cartridge, be sure to import the cartridge to its original slot.

See Importing Cartridges on page 16 for instructions.

NOTE: After a firmware update, the firmware revision displayed on the operator panel is not updated until the autoloader is power cycled.

Using the Serial Port

1. With the autoloader running, connect a null modem cable from the service computer serial (COM) port to the autoloader serial port.
2. Turn on the service terminal.
3. Start up HyperTerminal on the service computer.
4. In the **New Connection** dialog box enter “FS2” for the name and click **OK**.
5. In the **Connect To** dialog box, for the **Connect using** field select the COM Port number that you have chosen and click **OK**.
6. In the **COM Properties** dialog select the following values:
   - Bits per second: 38400
   - Data bits: 8
   - Parity: none
   - Stop bits: 1
   - Flow Control: none
7. Click **OK**.
8. Press **ENTER**. After establishing a connection, TSmonitor starts automatically.

NOTE: If the autoloader has been switched offline by operator panel activity, manually restore the autoloader to an online state. You may also need to log off from a previous logon. To do so, type “lgo”.

9. Log on as administrator. The command is “lgi”. The user name is “admin”. The password is “secure”.
10. Type “lfw”.
11. You are prompted to click **Transfer > Send**.
12. Browse to the appropriate firmware file. The file extension is “FBI”. Make sure that the selected protocol is **XMODEM**. Click **Send**.

    The autoloader resets automatically after the firmware has been loaded.

Performing System Test

System Test cycles the autoloader through the process of loading, calibrating, and unloading all cartridges in the carousel.

Running a system test verifies the basic operational soundness of the autoloader and tape drive. All regular backup or restore operations are suspended while a system test is in progress.

1. Press **+** or **–** until **Go offline** appears. Press **ENTER**.
2. Press **+** or **– Diagnostic** appears. Press **ENTER** to select.
3. Press **+** or **–** until **Loader Diag** appears. Press **ENTER** to select.
4. **System Test** appears. Press **ENTER** to select.
5. **Select Cycles** appears. Press **+** or **–** to select from 270, 540, 1080, or Endless.
6. Press **ENTER** to begin the test.

   Messages are posted that report the progress of the tests being run.

7 Press **CANCEL** to end the test.

Retrieving Information

The **Information** menu provides access to information about the autoloader cycle count, recent events that occurred on the autoloader, and to the firmware level.

Viewing Error Logs

This option provides access to the autoloader errors and events (see Viewing Autoloader Error Codes on page 47 for a description of error codes).

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

2 Press **+** or **– Information** appears. Press **ENTER** to access the available options.

3 Press **+** or **–** until **Loader Info** appears. Press **ENTER** to access the available options.

4 Press **+** or **–** until **Error Log** appears.

5 Press **ENTER** to access logged errors.

NOTE: The most recent entry is number 0 and older entries are negative numbers.

6 Press **+** or **–** to display each error in the log. Press **ENTER** to access additional information about the error.

7 Press **CANCEL** when done.

Refer to Viewing Autoloader Error Codes on page 47 for descriptions of the possible autoloader error numbers generated in the log.

Displaying Cycle Count

This option displays the total system cycle count, which increments each time a tape is loaded into the drive or exported from the autoloader.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

2 Press **+** or **– Information** appears. Press **ENTER** to access the available options.

3 Press **+** or **–** until **Loader Info** appears. Press **ENTER** to access the available options.

4 Press **+** or **–** until **Cycle Count** appears.

The operator panel displays the total cycle count.

5 Press **CANCEL** when done.

Displaying Product Version

This option displays the overall product version of the autoloader.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

2 Press **+** or **– Information** appears. Press **ENTER** to access the available options.

3 Press **+** or **–** until **Drive Info** appears. Press **ENTER** to access the available options.

4 Press **+** or **–** until **Product Rev** appears. The operator panel displays the product version.

5 Press **CANCEL** when done.

Viewing Serial Numbers

At any time, you can display the serial number for the overall product or for the drive.

Displaying the Autoloader Serial Number

This option displays the serial number of the autoloader.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

2 Press **+** or **– Information** appears. Press **ENTER** to access the available options.

3 Press **+** or **–** until **Loader Info** appears. Press **ENTER** to access the available options.

4 Press **+** or **–** until **Serial Number** appears. The operator panel displays the serial number.

5 Press **CANCEL** when done.

Displaying the Drive Serial Number

This option displays the serial number of the drive.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

2 Press **+** or **– Information** appears. Press **ENTER** to access the available options.

3 Press **+** or **–** until **Drive Info** appears. Press **ENTER** to access the available options.

4 Press **+** or **–** until **Serial Number** appears. The operator panel displays the serial number.

5 Press **CANCEL** when done.

Viewing Firmware Levels

At any time, you can display the current versions of firmware for the overall product as well as for the drive.

Displaying Autoloader Firmware Version

This option displays the version of the firmware currently installed on the autoloader.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

2 Press **+** or **– Information** appears.. Press **ENTER** to access the available options.

3 Press **+** or **–** until **Loader Info** appears. Press **ENTER** to access the available options.

4 Press **+** or **–** until **Firmware Rev** appears. The operator panel displays the revision of the firmware currently installed in the autoloader.

5 Press **CANCEL** when done.

Displaying Drive Firmware Version

This option displays the version of the firmware currently installed on the drive.

1 Press **+** or **–** until **Go offline** appears. Press **ENTER**.

2 Press **+** or **– Information** appears. Press **ENTER** to access the available options.

3 Press **+** or **–** until **Drive Info** appears. Press **ENTER** to access the available options.

4 Press **+** or **–** until **Firmware Rev** appears. The operator panel displays the revision of the firmware currently installed in the autoloader.

5 Press **CANCEL** when done.

6

Using the Remote Management Unit

This section discusses using the remote management unit (RMU) interface. The RMU comes preinstalled in your autoloader. Before it can be used, though, you must configure it. Refer to Configuring the Remote Management Unit on page 14.

Overview

You can manage your autoloader remotely over an IP network by means of a web browser. All available functions are accessible without the need of a dedicated server or separate software. The operator panel **Commands** menu is not accessible by means of the RMU, but much of the functionality available under **Commands** can be found in the RMU **Maintenance** page.

NOTE: If the RMU is in operation, you only have access to the operator panel **Information** menu. In order to go offline and manage the autoloader by means of the operator panel, you have to log off the RMU.

RMU functionality is as follows:

- Configure the autoloader, drive, and media
- Reset, save, and reload the configuration
- Display autoloader, drive, and media status
- Configure the logs and traces
- Display logs and traces
- Administer passwords
- Set the time and date
- Configure event notification
- Reset the autoloader
- Run autoloader operations
- Perform diagnostic tests
- Update autoloader and drive firmware

In addition to these functions, the RMU interface offers help pages and support information.

Logging In

The RMU supports three levels of user account:

User Class	Standard User	Administrators	Service
Account Level	1	2	3
Description	Users who need general configuration and status information of the autoloader	Users who manage backups and maintain the autoloader from a remote location	Engineers who use the RMU as a tool for troubleshooting and analyzing exceptional situations remotely
Default Password	std001	adm001	ser001

Best practice is to change the default password immediately after you log in the first time, and periodically thereafter.

User tasks are assigned to one or more of the three user profiles:

Functionality	Standard User	Administrators	Service
Information Menu	X	X	X
Status Menu	X	X	X
Configuration Menu	N.A.	X	X
Maintenance Menu w/out Advanced Diagnostics	N.A.	X	N.A.
Maintenance Menu w/ Advanced Diagnostics	N.A.	N.A.	X
Log Menu	N.A.	X	X

Saving and Restoring Vital Product Data on the RMU

The vital product data (VPD) consists of the following pieces of information:

- SCSI ID
- Operating mode
- SCSI drive speed
- Barcode reader enablement status
- Unit serial number

VPD values can be saved on the RMU. Saving this information on the RMU makes it easy to restore the VPD in case the unit is ever damaged.

If any VPD parameters change after the unit is set up, click **SAVE** on the **RESET** page available through the RMU **Configuration** page. Always save the most current values.

NOTE: The operator panel **Configuration** menu presents an option to reset, but not an option to save.

Checking the Quick Status

A table containing an array of basic status information appears on the right side of the RMU display. This Quick Status table appears on all RMU pages.The following pieces of information are displayed in the **Quick Status** table:

Label	Description
Name	The name of the autoloader
Status	The overall status of the autoloader by icon
Lock	A lock to show the administrator is in the process of making configuration changes. Valid values for "Loader Lock" are None, RMU, SCSI, OCP and MONITOR. OCP is the term used for operator panel.
Cartridge in drive	The slot number of the tape currently mounted in the tape drive
Drive Status	Indicates by icon the overall status of the tape drive. The green "ok" icon indicates that the autoloader is fully operational and that no user intervention is required. The orange/yellow question mark indicates that user intervention is necessary but that the autoloader is still operational. The red cross indicates that user intervention is required and that the autoloader is not operational
Drive Activity	The current activity of the tape drive
Robotic Action	The current activity of the autoloader’s robotics
Time	The total amount of time the autoloader has been in operation
Drive Error Code	The code of the last error that occurred. Clicking on this code takes the user to a description of the code

Using the RMU Information Pages

These information pages display general information about the autoloader or the drive. These pages are accessible by all user account levels. No changes can be made by the user.

The following pieces of information are reported for the autoloader:

Label	Description
Serial number	The serial number of the unit
Temperature	The current operating temperature of the unit
Product ID	FastStor 2.1
Controller firmware revision	The version number of the robotics controller firmware
Firmware CRC	The firmware’s cyclic redundancy check code

Label	Description
Bootcode firmware revision	The build number of the firmware bootcode
Firmware build date	The date is displayed in the format MM-DD-YYYY
Number of firmware updates	The number of times the firmware has been updated
Number of power ups	The number of times the autoloader has been powered on
Barcode reader	Indicates whether or not the barcode reader functionality has been enabled
IP address	The IP address is displayed in the format xxx.xxx.xxx.xxx
MAC address	The media access control number, a unique number for each piece of hardware

The following pieces of information are reported for the drive:

Label	Description
Vendor ID	The drive vendor's ID number
Product ID	The drive's product ID number
Serial number	The drive's serial number
Product revision	The drive's product revision number
Firmware revision	The drive's firmware revision number
Data compression	Indicates whether or not data compression has been turned on
Interface type	SCSI
SCSI ID	The drive's current SCSI ID
Speed Selection	The drive's current speed
Temperature	The drive's current operating temperature
Drive Cooling Request	N.A.

Using the RMU Status Pages

These information pages show the general status of the autoloader or the media. These pages are accessible by all user account levels. No changes can be made by the user.

The following pieces of information are reported for the autoloader:

Label	Description
Status	Good, Warning, or Error
Cartridge in operation	The number of the cartridge currently in operation

Label	Description
Number of load-unload cycles	Number of load and unload cycles
Operation time	Time since first start.
Current drive status	Current status of the drive
Current drive activity	Current activity of the drive
Current robotic action	Number of retries
Barcode reader enabled	Yes or No

The following pieces of information are displayed for the media:

Label	Description
Slot number	The home slot number, 1-8
Status	Good, Warning, or Error
In drive	The drive number, if any.
Barcode	The barcode number
Write-protected	Yes or No

Using the RMU Configuration Pages

CAUTION: **The Configuration pages of the RMU interface present device specific settings to be selected or specified. Changes take effect only after a device reset.**

Only administrators and service personnel have access to the RMU **Configuration** page. The following parameters can be set by means of the **Configuration** page:

- Device
- Network
- User
- Real Time Clock
- Log
- Event Notification
- Reset

NOTE: The RMU **Configuration** page functionality is not the same as the functionality available by means of the operator panel **Configuration** menu. Refer to Understanding the Menu Structure on page 13.

Configuring the Device

The following parameters can be configured for the device:

Label	Description
Loader SCSI ID	Select the SCSI ID for the autoloader. NOTE: This feature is not available for the LTO version of the FastStor 2.
Drive SCSI ID	Select the SCSI ID for the drive.
Autoloader mode	Select the mode for the autoloader. Refer to Autoloader Operating Modes on page 22.
Barcode reader enabled	Select **Yes** or **No**.

Configuring the Network

The following parameters can be configured for the network:

Label	Description
DHCP address	If DHCP mode is selected, the manual entries are disabled and are not used
Hostname	Specify a hostname.
IP address	Specify an IP Address in xxx.xxx.xxx.xxx format
Network Mask	Specify a network mask in (xxx.xxx.xxx.xxx) format.
Gateway Address	Specify the gateway address in (xxx.xxx.xxx.xxx) format.

NOTE: After submitting the new information, you are asked to confirm the change.

Configuring the User

The following parameters can be configured for the user:

Label	Description
Access level	There are three user account levels available in the system.
Access level name	The name for each user account level can be changed. The names entered here are used on the login screen. The currently logged in user account level name is displayed at the bottom of the left banner on each page
Password	The password for each user account level can be changed. In order to change the password for the selected password remove the **** that are the default and type in a new password. When changing the access level name, a new password has to be entered for the new access level. It can be the old password or a completely new one, but the password must be entered.
Repeat password	This entry must match the previous entry.
OCP access pin enabled	An optional operator panel access pin code is used to control access to the operator panel.

OCP access pin code	Four digits.
Repeat OCP access pin code	This entry must match the previous entry.
Support name	Specify the name that is displayed in the support page as contact point.
Support phone	Specify the phone number to dial in case of a support request.
Support email	Specify the email address to contact in case of a support request.

Configuring the Real Time Clock

The following parameters can be configured for the real time clock (RTC):

Label	**Description**
Time	standard or 24 h & the month or day listed first
Date	DD-MM-YYYY

Configuring the Log

The following parameters can be configured for the log:

Label	**Description**
Trace Log Mode	Error and trace logs can be enabled or disabled through filtering options. Because the filters apply during log entries in the database and are not retrieve filters, events that have been filtered out are permanently unretrievable. Choices are “off,” “on,” and “stop trace at first error.”
Trace Level	Only the service level user can configure the trace level.
Trace Filter	Only the service level user can configure the trace filter options.

Configuring Event Notification

The following parameters can be configured for event notification:

Label	**Description**
Notify errors	Specify whether or not notifications of errors are to be e-mailed to users.
Notify warnings	Specify whether or not notifications of warnings are to be e-mailed to users.
To email address	Specify the e-mail address used to which to send notifications of errors or warnings. Use the format *user@domain.domain_type*.
Email domain	The domain name to use. The autoloader itself creates the correct email address from using this domain name as the from e-mail address.

SMTP server address	IP address of the SMTP server used to send mail.

Resetting the Configuration

The following parameters can be reset:

Label	Description
Restore factory defaults	Press **Reset** to restore the factory defaults. Power cycle the unit after the reset is completed.

Using the RMU Maintenance Pages

Only administrators and service personnel have access to the RMU **Maintenance** page. The following parameters can be set by means of the **Maintenance** page:

- Operations
- General diagnostic
- Advanced diagnostic
- Firmware
- Reset

Running Operations

The **Operations** page allows users at the system administrator level to run the following predefined operations:

- Reinitialize library controller
- Perform inventory scan
- Load cartridge into drive
- Unload cartridge from drive
- Import to slot
- Export from slot
- Perform clean process
- Perform drive upgrade
- Bulk exchange

These same operations can be selected by using the operator panel. Depending on the operation selected, a slot number may also be required. All available slots are either enabled or disabled according to the inventory status of the media. Click **Execute** to start the selected operation. There is no stop button to stop the selected operation. Wait for the operation to complete and then check the status.

Running the General Diagnostic Test

The **General Diagnostic** page allows users at the system administrator level to run the system test. To run system tests, select the number of test cycles and click **Execute**. To cancel a test before its normal completion, click **Stop**.

Running the Advanced Diagnostic Tests

The **Advanced Diagnostic** page allows users at the service level to run the following predefined operations:

- Load/Unload test
- Belt test
- Slider test
- Gripper test
- Picker test
- Door Test

To run system tests, select the number of test cycles and click **Execute**. To cancel a test before its normal completion, click **Stop**.

Updating Firmware

Use the RMU **Firmware** page to support network-based firmware upgrades for the autoloader. Select the appropriate file from a PC or network-attached server. Click **Update** to upload the file to the autoloader. There is no way to back up the current firmware file, so be sure you have access to older firmware revisions.

Resetting the Autoloader

The **Reset** page is used to perform an autoloader reset. During an autoloader reset the connection to the autoloader can be lost. If this happens, reload the RMU page manually.

Accessing Log Files

The RMU **Logs** page displays log entries for the system or for the drive. The log entries are browsable. You can specify the number of entries per page and the entry start number. Log entries can also be stored to a file. Trace logs can be deleted from the system. Refer to Viewing Autoloader Error Codes on page 47 for descriptions of the possible autoloader error numbers generated in the log.

7

Troubleshooting and Diagnostics

This section contains information on troubleshooting and diagnosing your autoloader.

Installation Issues

Problems encountered during the installation of the autoloader are usually caused by improper SCSI bus configuration, application software configuration errors, or by an incorrectly configured operating system. If the application software that you are using is not communicating with the autoloader after installation, check the following:

- **SCSI ID**—The autoloader uses one SCSI ID for the tape drive and one SCSI ID for the autoloader robotics. Depending on other devices attached to the same SCSI bus and their SCSI IDs, you may need to change the SCSI ID of the autoloader or tape drive before you can use the autoloader. Review the manuals for the other devices on the SCSI bus or your operating system to determine which SCSI IDs are currently in use. See Viewing or Changing the SCSI IDs on page 21 for instructions about changing the autoloader SCSI IDs.
- **SCSI Cabling**—Verify that all SCSI cables are securely connected at both ends. Check the length and integrity of your SCSI cabling. The total length of all cables connected to a SCSI bus must not exceed 19 feet (6 meters) for a SCSI-1 SE bus, 10 feet (3 meters) for a Fast SCSI (Narrow or Wide) or an Ultra SCSI (Narrow or Wide) SE bus, 40 feet (12 meters) for an LVD bus with multiple devices, or 82 feet (25 meters) for an LVD bus with a single device. The length of the internal SCSI cabling inside the autoloader is 2 feet (60 cm). This length must be included in any calculations of cable length.
- **Termination**—If the autoloader is the only SCSI device—other than the SCSI host system adapter—on the selected SCSI bus, it must be terminated. Likewise, if the autoloader is physically the last SCSI device on the SCSI bus, it must be terminated. Only the devices physically at the beginning and end of the SCSI bus should be terminated. Refer to the manuals supplied with other devices on the SCSI bus for information on enabling or disabling termination on those devices. To terminate the autoloader, locate the terminator in the accessories package and press it firmly into either of the two SCSI connectors on the rear panel of the autoloader. Secure the terminator by tightening the finger-screws until snug. The supplied terminator is "dual mode" and works on both Low-Voltage Differential (LVD) and Single Ended (SE) SCSI buses. Check all SCSI and power connections and confirm that the unit is attached to a valid SCSI SE or LVD bus.
- **Compatibility**—Ensure that the autoloader is compatible with the SCSI host system adapter and backup application you plan to use. For a list of compatible SCSI adapters and application software, check with your SCSI host system adapter manufacturer, backup application vendor, or contact your service representative (refer to Getting Help on page 58).

NOTE: ADIC recommends LVD components. A single ended SCSI host system bus adapter can work, but severely degrades performance. Also, if there are any SE devices on the same SCSI bus, the entire SCSI bus negotiates down to SE speed and severely degrades performance.

- **Backup Application Installation**—Refer to the documentation included with your backup application for instructions on how to verify proper installation. Most backup software packages require an additional module to communicate with the autoloader robotics.

NOTE: Many backup applications use their own drivers for the autoloader and drive. Before installing a driver, make sure it is not in conflict with the software.

- **Device Driver Installation**—Make sure that the proper device driver, if applicable, is installed for the autoloader. Contact your service representative for more information.

Troubleshooting Matrix

Table 4 on page 40 describes troubleshooting problems and solutions encountered with the autoloader power source, tape media, cleaning equipment, and SCSI commands.

Table 4 Troubleshooting Table

Problem	Solution
Power	
Autoloader does not power on	• Check all power cord connections. • Make sure the power switch on the front panel is in the ON position. • Make sure there is power to the outlet. Try another working outlet. • Replace the power cord. • Contact your service representative.
No display messages appear	• Make sure the power cord is connected. • Make sure the power switch is on. • Power cycle the autoloader. • Download autoloader firmware. • Contact your service representative.

Table 4 Troubleshooting Table

Problem	Solution
Tape Movement	
Tape lodged in drive	• Power cycle the autoloader, allow it to complete initialization, which in rare cases can take as long as 10 minutes, and then retry unloading the tape using the autoloader operator panel controls. • Allow the tape drive to complete all operations. This may take as long as ten minutes if you reset or cycle power on the autoloader while the cartridge is positioned at the physical end of the media. • Make sure that the backup software is not reserving the slot or preventing the tape drive from ejecting the cartridge. The backup software needs to cancel the reservation and any hold it has on the tape drive. • Temporarily disconnecting the autoloader from the host server system eliminates the host system and its software as a problem source. • Contact your service representative.
Tape lodged in storage slot	• See Removing Cartridges Lodged in Slots on page 45.
Media	
Media barcode labels are not being read	• Make sure the barcode labels are applied in the correct orientation on the cartridge. • Make sure the barcode reader cable is fully seated in the receptacle on the autoloader. • If problem continues, contact your service representative.
Cleaning or data cartridge incompatible with drive	• Make sure you are using cleaning and data cartridges that are compatible with the drive. The autoloader automatically unloads incompatible cartridges to their original slots, the Media Attention LED flashes, and an exclamation point (!) appears in the inventory display for the indicated slot number.

Table 4 Troubleshooting Table

Problem	Solution
Cannot write to or read from tape	• Make sure that the cartridge is write enabled (move the write-protect switch to the enabled position). • Make sure that the cartridge has not been written using an incompatible format. • Make sure that the cartridge is an acceptable format for your drive type (see Specifications on page 59). • Make sure that the cartridge has not been exposed to harsh environmental or electrical conditions and is not physically damaged in any way. • Many backup applications do not read or write to cartridges that were created using a different backup application. In this case, you may have to perform an erase, format, or label operation on the cartridge. • Make sure you understand any data protection or overwrite protection schemes that your backup application may be using, which could prevent you from writing to a given cartridge. • Retry the operation with a different, known good tape. • Clean the tape drive. See Cleaning the Tape Drive on page 19.
SCSI ID	
Changed drive SCSI ID, but the host server system does not recognize the new ID	• Make sure that all SCSI devices on the same bus have unique ID numbers. • If the SCSI bus is narrow (50-pin) only SCSI IDs 0 through 7 are available. • Make sure that you cycle power on the autoloader after changing the SCSI ID. • Reboot the host server system.

Table 4 Troubleshooting Table

Problem	Solution
Autoloader Performance	
The autoloader is not efficiently backing up data	• Check the network bandwidth from the host system. If you are backing up data over a network, consider comparing to a local-only backup. • Make sure the autoloader and tape drive are on their own SCSI bus and not daisy-chained to another tape drive or to the hard drive being backed up. • Make sure the autoloader is connected to an LVD SCSI bus and there are no SE devices on the same bus, because this causes the entire bus to negotiate down to SE speed. • Clean the tape drive. See Cleaning the Tape Drive on page 19 for instructions. • Try a new cartridge. A marginal cartridge can cause performance problems due to bad spots on the tape requiring retries. • Backing up compressed data lowers performance. • Check the size of the files. Small file size can impact performance. • Confirm that the backup application is utilizing block sizes of at least 32KB, preferably 64KB. Refer to the backup application documentation for details.
Cleaning	
Cannot load the cleaning cartridge	• Make sure you are using an allowed cleaning cartridges (see Specifications on page 59). • Contact your service representative.
Media Attention LED Issues	
Contamination by loose debris	• Avoid contamination by ensuring that the autoloader is installed in a clean, contamination-free environment. Cartridges should be stored vertically in their plastic cases. Continue cleaning the tape drive as needed.
Contamination by head staining (Caused by adhesion of chemicals that are present in the tape media to the head surface)	• One or two passes with a cleaning cartridge should resolve the Media Attention LED caused by normal head staining. If a cleaning cartridge is unsuccessful in resolving a cleaning light after 3 or more attempts, the cleaning cartridge may be contaminated and should NOT be used in another drive.
Non-acclimated media	• A cartridge should be acclimated for at least 24 hours before being used, particularly if it has been stored at a substantially different temperature or level of humidity than the autoloader.
Cleaning cartridge is incompatible	• Make sure you are using an allowed cleaning cartridges (see Specifications on page 59).

Table 4 Troubleshooting Table

Problem	Solution
Expired cleaning cartridge	• Verify the number of cleanings per cleaning tape for your media type (see Specifications on page 59).

Bad/defective/contaminated media	• If the Media Attention LED is cleared and the drive has been cleaned, and then immediately reappears each time a particular cartridge is reloaded, that cartridge should be suspected as being defective, if it is not an invalid cleaning cartridge.
	  • If this occurs, export the cartridge and load a known good cartridge. In some cases, a cartridge can be worn out, have a defective cartridge memory, or have been formatted as a Firmware Upgrade Tape.
	  • Any cartridge that is suspected of being defective or contaminated should NOT be reused in any drive.

Errors Displayed on Front Panel	
"!" in autoloader operator panel inventory display	• See Operating the Autoloader on page 11 for more information.
There is an error code on the LCD display	• Look up the error code, try to resolve the failure, and power cycle (see Viewing Autoloader Error Codes on page 47).
Device Not Detected on SCSI Bus	
Connected to a high voltage differential SCSI bus/host system adapter	• Attach device to a LVD SCSI host system adapter/bus. • SCSI cable length exceeded, use shorter cable, or remove other devices from the bus. Device not properly terminated (see Installation Issues on page 39). • Power on device before powering on the host system. • Check that the device has been powered on and is not in an error state.
SCSI Errors	
Connected to a high voltage differential SCSI bus/host system adapter	• Attach device to a LVD SCSI host system adapter/bus. • SCSI cable length exceeded, use shorter cable, or remove other devices from the bus (see Installation Issues on page 39). • Device not properly terminated.

Table 4 Troubleshooting Table

Problem	Solution
SCSI ID	
Changed drive SCSI ID, but the host server system does not recognize the new ID	• Make sure that all SCSI devices on the same bus have unique ID numbers. • If the SCSI bus is narrow (50-pin) only SCSI IDs 0 through 7 are available. • Make sure that you cycle power on the autoloader after changing the SCSI ID. • Reboot the host server system.

Removing Cartridges Lodged in Slots

If the autoloader experiences a severe mechanical problem or if you need to remove cartridges because of a power failure or other circumstance in which the autoloader is unable to export the cartridges in the carousel, follow these steps.

NOTE: Contact your support representative if a cartridge is lodged in the drive.

1 Power off the autoloader as follows:

   a. Use the tip of a pen to press the OFF.

CAUTION: Pressing the OFF switch stops the autoloader from functioning, but it does not remove power from the autoloader. To remove power, you must disconnect the power cord from the power source.

   b. Unplug the power cord from the outlet.

   c. Unplug the power cord from the rear panel of the autoloader.

   d. Disconnect the SCSI cables from the rear panel of the autoloader.

2 If the autoloader is rackmounted, use a screwdriver to remove the screws that secure the mounting brackets from both sides of the autoloader and remove the autoloader from the rack.

3 Place the autoloader on a cleared work space.

4 Loosen the thumbscrews on the fan housing and remove the fan housing by gently pulling it straight back from the rear panel.

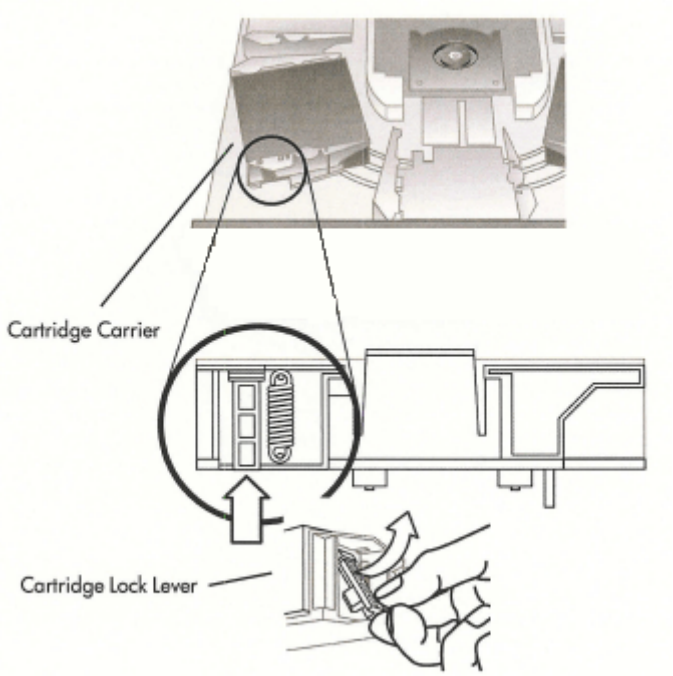
5 Remove the five screws on the back and the screws on each side of the autoloader cover.

6 Remove the autoloader cover by lifting it from the back and easing it out from under the front panel display cover.

7 Lift the cartridge carrier, with each cartridge you want to remove, straight up from the autoloader.

NOTE: To remove the carrier directly in front of the mail slot, gently rotate the carousel counterclockwise by moving the belt or carriers until the carrier is no longer in front of the mail slot.

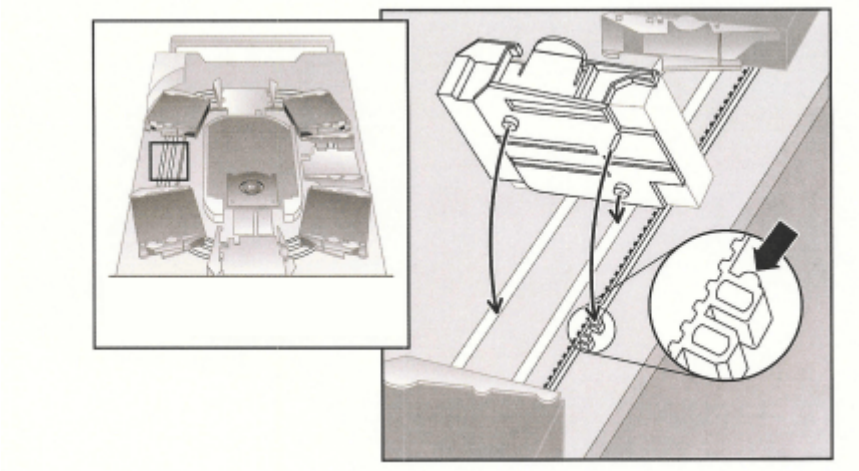
8 On each carrier, carefully pull the cartridge lock lever away from the carrier, allowing the cartridge to slide out of the carrier.



9 After removing the cartridges from the desired carriers, reinstall each carrier on the autoloader belt.

- Make sure that the rollers on the bottom of the carrier are aligned in the carrier tracks.
- Make sure that the belt posts beneath each carrier are inserted into the proper autoloader belt loop.

NOTE: There are unused loops on the belt. The proper belt loops have an extra bump on the outside of the loop.



10 Ensure the carrier is properly installed on the belt by gently pressing on the top of the carrier and sliding it back and forth. If it is properly attached to the belt, it should not move. If it does, reinstall the carrier.

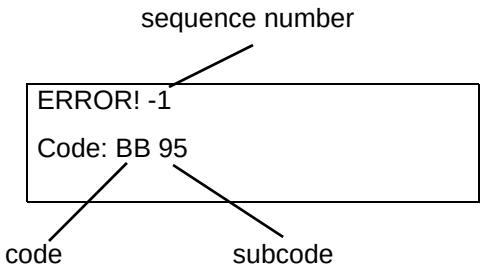
11 Replace the top cover of the autoloader and reinstall the cover screws and mounting brackets.

Viewing Autoloader Error Codes

If an error occurs during operation of the autoloader, the autoloader stops the current operation, displays an error code on the operator panel, and records the error code in an error log. The error log has a storage capacity of 64 entries and is organized as a circular buffer. The oldest entries are deleted at overflow. This error code is accessible by means of the operator control panel, RMU, and the serial port.

Understanding Error Messages

The error message that is displayed on the operator panel consists of the event sequence number, the main error code, the error subcode, and a timestamp.



Error events are sequenced from 0 downward. The designation “-1” for example, indicates the 2nd event.

Error codes break out as shown below:

- Code: BB - Drive unload timeout
- Subcode: 95 - Drive unload operation terminated unsuccessful

See Tables 4 through 18 for explanations of error codes.

See Table 19 for explanations of error subcodes.

Viewing Error Logs

You can view error logs and events either on the operator panel or the RMU.

- To view the error log on the operator panel, see Viewing Error Logs on page 26.
- To view the error log on the RMU, see Accessing Log Files on page 37.

Resolving Errors

Unless otherwise noted in the following tables, attempt to resolve the error by cycling power on the autoloader and retrying the last operation. If the error persists, contact your service representative (refer to Getting Help on page 58).

Table 5 Not Ready Error Codes

Error Code	Details and Description
01H	Unit becoming ready by scanning magazines, etc.
02H	Manual intervention required.
03H	Cause not reportable.
04H	Firmware upgrade in process.
05H	Front door is open.
06H	Working on another SCSI command.
07H	Cleaning cartridge installed.
08H	Loader is in sequential mode.
09H	Loader is offline.
0A-0FH	Reserved.

Table 6 Unit Attention Error Codes

Error Code	Details and Description
10H	Power on or reset occurred.
11H	Media may have changed.
12H	Media removal prevented.
13H	Invalid cartridge.
14H	Not ready to transition.
15H	Mode parameters changed.
16H	Microcode has changed.
17H	Door was open and was closed again.
18H	SCSI bus type changed to SE.
19H	SCSI bus type changed to LVD.
1AH	Invalid cleaning cartridge.
1BH	Invalid upgrade tape.
1CH	Cleaning requested.
1DH-1FH	Reserved.

Table 7 Recovered Error Codes

Error Code	Details and Description
20H	Error log overflow.
21H	SCSI parity error.

Table 7 Recovered Error Codes (Continued)

Error Code	Details and Description
22H-2FH	Reserved.

Table 8 Hardware Error Codes

Error Code	Details and Description
30H	Media not present.
31H	POST soft failure.
32H	Loader communications timeout.
33H	Loader communications UART error or buffer overflow.
34H	Bad status returned from loader.
35H	Unexpected status from test.
36H	Cartridge has no home.
37H	Tape drive handle problem.
38H	No cartridge in drive during unload.
39H	Loader mechanism problem after retries.
3AH	Timeout moving cartridge.
3BH	Reserved.
3CH	Could not unlock door after retries.
3DH	Error during scanning.
3EH	Could not lock door after retries.
3FH	Unexpected door open.
40H	Did not find all expected slots during elevator movement.
41H	Cartridge already in drive during cartridge loading.
42H	Slot empty during cartridge loading.
43H	Cleaning tape expired.
44H	Cleaning failed.
45H-4FH	Reserved.

Table 9 Illegal Request Error Codes

Error Code	Details and Description
50H	No slot free for transfer.
51H	All slots empty.

Table 9 Illegal Request Error Codes (Continued)

Error Code	Details and Description
52H	Parameter length error.
53H	SCSI invalid opcode.
54H	Invalid element address.
55H	Invalid field in CDB.
56H	Invalid mode on write buffer.
57H	Invalid drive specified.
58H	Invalid test number at diagnostic.
59H	Invalid offset on write buffer.
5AH	Invalid size on write buffer.
5BH	Bad controller image checksum.
5CH	Invalid LUN
5DH	Parameter list error: invalid field.
5EH	Parameter list error: parameter not supported.
5FH	Parameter value invalid.
60H	Saving parameters not supported.
61H	Cleaning slot empty.
62H	Cleaning slot doesn’t have cleaning tape.
63H	SCSI invalid ID message.
64H	Media load/eject failure.
65H	Destination element full.
66H	Source slot or drive empty.
67H	Unrecognized loader command.
68H	Wrong header length.
69H	Bad sequence number.
6AH	Wrong checksum.
6BH	Command unspecified.
6CH	Configuration problem: no bar code reader installed.
6DH	Flash image does not fit boot code.
6EH	Medium removal prevented by drive.
6FH	Firmware image contains wrong personality.

Table 10 Aborted Command Error Codes

Error Code	Details and Description
70H	SCSI message error.
71H	SCSI parity error.
72H	SCSI invalid message.
73H	SCSI overlapped command attempt.
74H-79H	Reserved.

Table 11 Additional Error Codes

Error Code	Details and Description
7AH-7DH	Reserved.
7EH	Reservation conflict status.
7FH	Reserved.

Table 12 Robotic Control Error Control

Error Code	Description	Details
81H	Invalid command error	This error indicates that the robotics have received an invalid command issued by the library controller. A communication failure or non-matching autoloader code.
82H	Device status not suitable to execute this command	If the robotics are busy, some commands cannot be executed at the same time. This error indicates a probable violation. This is not an error condition, but does result in busy being reported to the host system for the requested SCSI command.
83H	Inventory not valid	The cartridge inventory is not valid because of manual changes or previous fatal errors. Update the inventory using appropriate Set Slot Status commands.
84H	Source element not ready	The transport source element is empty.
85H	Destination element not ready	The destination element is full.
86H	User has attempted to access the door while media removal is prevented	Finish importing or exporting a cartridge. Then retry the operation.
87H	A robotic command has timed out	Use the Configuration/Reset command to reset the unit.
88H	Communications error during loop-back	Cycle power on the autoloader and attempt the operation again. If the error recurs, contact your service representative (refer to Getting Help on page 58).

Table 12 Robotic Control Error Control (Continued)

Error Code	Description	Details
89H	Timeout detected by the autoloader on BHC testing	Cycle power on the autoloader and attempt the operation again. If the error recurs, contact your service representative (refer to Getting Help on page 58).
8FH	No error after autoloader recovery	Cycle power on the autoloader and attempt the operation again. If the error recurs, contact your service representative (refer to Getting Help on page 58).

Table 13 Function Errors

Error Code	Description	Details
90H	Mechanical initialization failure	Use **Configuration > Reset** to reset the unit. If the error recurs, contact your service representative (refer to Getting Help on page 58).
91H	Inventory scan failure	Use **Commands > Reinventory** to perform an inventory rescan.
92H	Preposition failed	Use **Diagnostics > Loader Diagnostics > Library Verify**. If the error recurs, contact your service representative (refer to Getting Help on page 58).
93H	Cartridge mount error	Use **Diagnostics > Loader Diagnostics > Library Verify**. If the error recurs, contact your service representative (refer to Getting Help on page 58).
94H	Cartridge dismount error	Use **Diagnostics > Loader Diagnostics > Library Verify**. If the error recurs, contact your service representative (refer to Getting Help on page 58).
95H	Import error	Use **Diagnostics > Loader Diagnostics > Library Verify**. If the error recurs, contact your service representative (refer to Getting Help on page 58).
96H	Export error	Use **Diagnostics > Loader Diagnostics > Library Verify**. If the error recurs, contact your service representative (refer to Getting Help on page 58).
97H-9FH	Reserved.	Not Applicable.

Table 14 Low Level Axis Error Codes

Error Code	Description	Details
A0H	Belt axis error	An error occurred during cartridge carrier movement (position not found).
A1H	Slider axis error	Transport slider unable to reach estimated position.
A2H	Gripper position error	Gripper unable to reach position.
A3H	Cartridge pick error	Missing cartridge during pick operation of gripper.

Table 14 Low Level Axis Error Codes (Continued)

A4H	Door function error	Slider door in front bezel not in the requested position during device operation.
A5H	Fan Error	Autoloader processor detected a fan error.

Table 15 Electronic Hardware Error Codes

Error Code	Description	Details
B0H	ROM error	Cycle power on the autoloader and attempt the operation again. If the error recurs, contact your service representative (refer to Getting Help on page 58).
B1H	RAM error.	Cycle power on the autoloader and attempt the operation again. If the error recurs, contact your service representative (refer to Getting Help on page 58).
B2H	NVRAM error	Cycle power on the autoloader and attempt the operation again. If the error recurs, contact your service representative (refer to Getting Help on page 58).
B5H	Display error	Cycle power on the autoloader and attempt the operation again. If the error recurs, contact your service representative (refer to Getting Help on page 58).
B6H	Memory error	Cycle power on the autoloader and attempt the operation again. If the error recurs, contact your service representative (refer to Getting Help on page 58).
B7H	Timeout on autoloader command	Cycle power on the autoloader and attempt the operation again. If the error recurs, contact your service representative (refer to Getting Help on page 58).
B8H	Barcode error	Use **Commands > Re-inventory** to perform an inventory rescan. If the problem recurs, replace the barcode reader.
B9H	Database error	Contact your service representative (refer to Getting Help on page 58).

Table 16 Drive Error Codes

Error Code	Description	Details
BAH	Drive load timeout	Cycle power on the autoloader. Verify that the fan is operational. If the error recurs, contact your service representative (refer to Getting Help on page 58).

Table 16 Drive Error Codes (Continued)

BBH	Drive unload timeout	Cycle power on the autoloader. Verify that the fan is operational. If the error recurs, contact your service representative (refer to Getting Help on page 58).
BCH	Over temperature problem	Cycle power on the autoloader. Verify that the fan is operational. If the error recurs, contact your service representative (refer to Getting Help on page 58).
BDH	No connection to drive	Cycle power on the autoloader and attempt the operation again. If the error recurs, contact your service representative (refer to Getting Help on page 58).
BEH	Generic drive response error	Cycle power on the autoloader and attempt the operation again. If the error recurs, contact your service representative (refer to Getting Help on page 58).
BFH	Drive broken, needs repair	Cycle power on the autoloader and attempt the operation again. If the error recurs, contact your service representative (refer to Getting Help on page 58).

Table 17 Barcode Error Codes

Error Code	Description	Details
C0H	The Library Verify reports that the autoloader has detected different reading results for a single barcode label.	Check barcode labels. Use **Commands > Re-inventory** to perform an inventory rescan.
C1H-CFH	Reserved.	Not Applicable.

Table 18 Network Error Codes

Error Code	Description	Details
D0H	Error at network initialization	Check the cable connection and the network configuration, then retry the operation. If not successful, contact your service representative (refer to Getting Help on page 58).
D1H	Telnet server error	Check the cable connection and then power cycle the unit. If the problem recurs, contact your service representative (refer to Getting Help on page 58).
D2H	Web server error	Check the cable connection and then power cycle the unit. If the problem recurs, contact your service representative (refer to Getting Help on page 58).
D3H	RMU EEPROM access error	Check the RMU connectivity and then power cycle the unit. If the problem recurs, contact your service representative (refer to Getting Help on page 58).

Table 18 Network Error Codes (Continued)

Error Code	Description	Details
D4H	No RMU found	Check the RMU connectivity and then power cycle the unit. If the problem recurs, contact your service representative (refer to Getting Help on page 58).
D5H	Error in write data to RMU EEPROM	Check the RMU connectivity and then power cycle the unit. If the problem recurs, contact your service representative (refer to Getting Help on page 58).

Table 19 Subcode Descriptions

Error Code	Details and Description
00H	No error.
01H	Communication timeout.
02H	Length expired before expected character got.
03H	Any other kind of drive error.
10H	Start pattern missing.
11H	Sequence enumeration error.
12h	Packet length error.
13H	Checksum mismatch.
14H	End pattern missing.
15H	Drive busy -- command rejected.
16H	General drive error.
17H	Byte stuffing error.
18H	Command negative acknowledged.
21H	Carrier state error.
22H	Repetitions error. Number of repetitions reached.
23H	Move to slot position repetitions error. Number of repetitions at move to slot reached.
24H	Move to eject position repetitions error. Number of repetitions at move to eject position reached.
25H	Belt start error. Start of belt motor unsuccessful.
26H	Belt backward start error.Start of belt motor unsuccessful.
27H	Belt home error. Home carrier at move to home position not found.
28H	Unexpected belt home error. Unexpected home carrier detected at belt movement.
29H	Belt door stop error. Belt stopped by door opening.

Table 19 Subcode Descriptions (Continued)

Error Code	Details and Description
2AH	Belt position error at move to carrier 1 (home slot).
2BH	Belt position error at move to carrier 2.
2CH	Belt position error at move to carrier 3.
2DH	Belt position error at move to carrier 4.
2EH	Belt position error at move to carrier 5.
2FH	Belt position error at move to carrier 6.
30H	Belt position error at move to carrier 7.
31H	Belt position error at move to carrier 8.
32H	Belt position error at move to carrier 9 (optional).
33H	Belt position error at move to carrier 10 (optional).
35H	Gripper start error.Start of gripper motor unsuccessful.
36H	Gripper open error. Gripper open position not reached.
37H	Gripper close error. Gripper close position not reached.
38H	Gripper hold error. Gripper hold/closed position not reached.
39H	Gripper unexpected closed error. Gripper closed although a cartridge should be there.
40H	Slider start error. Start of slider motor unsuccessful.
41H	Slider home error. Slider home position not reached.
42H	Slider forward positioning error. Slider position in forward direction not reached.
43H	Slider complex forward positioning error. Slider position in a complex forward movement not reached.
44H	Slider backward positioning error. Slider position in backward direction not reached.
45H	Slider complex backward positioning error. Slider position in a complex backward movement not reached.
46H	Slider lost steps at forward movement.
47H	Slider lost steps at complex forward movement.
48H	Slider lost steps at backward movement.
49H	Slider lost steps at complex backward movement.
4AH	Wrong slider start position at forward movement.
4BH	Wrong slider start position at complex forward movement.
4CH	Wrong slider start position at backward movement.
4DH	Wrong slider start position at complex backward movement.
4EH	Error in slider adaption.

Table 19 Subcode Descriptions (Continued)

Error Code	Details and Description
50H	Door open error. Door open position not reached.
52H	Door repetitions error. Door close repetitions reached.
60H	Axis initialization error. Initialization of all axis not successful.
61H	Carrier position error.
70H	Unknown cartridge error.
71H	Door close error at import/export.
72H	Wrong source carrier state.
73H	Wrong destination carrier state.
74H	Multiple carrier state.
75H	Expected cartridge in transit not found.
76H	Unexpected cartridge in transit found.
79H	Door error (door not closed) after import, cartridge already imported.
81H	Drive wakeup failed.
88H	Error accessing the slot status in system database.
90H	Robotic load operation could not reach the cartridge present position.
91H	No drive activity after the load operation.
92H	Timeout while loading cartridge.
93H	No drive activity after the unload operation.
94H	Timeout while unloading cartridge.
95H	Drive unload operation terminated unsuccessful.
96H	Robot could not detect an ejected cartridge at unload operation.
97H	No slot was free at robotic unload operation.

Getting Help

Before calling ADIC Technical Assistance Center (ATAC), follow these steps - so that you can take full advantage of your call:

- Review all documentation carefully.
- Be prepared to explain whether the software or hardware has worked properly at anytime in the past. Have you changed anything recently?
- Pinpoint the exact location of your problem, if possible. Note the steps that led to the problem. Are you able to duplicate the same problem or is it a one-time occurrence?
- Note any error messages displayed on your PC screen or file server. Write down the exact error message.
- If at all possible, call while at your computer, with the autoloader installed and turned on.
- If running on a network, have all relevant information available (for example, type, version #, network hardware, etc.).
- Be prepared to provide:
    - Your name and your company's name
    - Model number
    - Serial number of the autoloader (obtained from the rear panel of the unit)
    - Serial number for the Firmware Revision of Autoloader and Drive, accessed using the autoloader's Information menu (see Viewing Firmware Levels)
    - Software version numbers
    - Device driver information
    - Host system application name and version
    - Hardware configuration, including firmware versions, date, and number
    - Type of PC, DOS version, clock speed, RAM, network type, network version, and any special boards installed
    - A brief description of the problem
    - Where you purchased your autoloader

Having this information available when you call for customer assistance enables the ADIC Technical Assistance Center personnel to resolve your problem in the most efficient manner possible.

8

Specifications

Use the following information to learn more about the physical requirements necessary to use and store the autoloader, the capacity capabilities necessary to operate the autoloader, the environmental requirements necessary to operate the autoloader, and the operational requirements and media requirements for proper use of the tape drive.

Physical

Table 20 provides the physical requirements necessary to use and store your autoloader.

Table 20 Physical Specifications

Characteristic	Product Alone	Packaged
Height	8.8 cm (3.5 in.)	20.3 cm (8.0 in.)
Width	42.2 cm (16.6 in.)	60 cm (23.6 in.)
Depth	61.7 cm (24.3 in.)	74.2 cm (29.2 in.)
Weight	9.5 kg (21.0 lb)	13.2 kg (29.0 lb)

Capacity

Table 21 provides the capacity specifications for your autoloader with an SDLT-600 tape drive.

Table 21 SDLT-600 Autoloader Specifications

Characteristic	Specification
Drive type	1 Quantum SDLT 600 drive
Maximum storage capacity	Native: 2400 GB (assuming 8 cartridges) Compressed: 4800 GB (assuming 8 cartridges and 2:1 compression)
Maximum data transfer rate	Native: 36 MBps Compressed: 72 MBps

Table 21 SDLT-600 Autoloader Specifications

Characteristic	Specification
Number of slots	8
MTBF	250,000 hours
Interface	LVD Ultra SCSI, 68-pin HD connector

Environment

Table 22 provides the environmental requirements necessary to operate your autoloader.

Table 22 Environmental Specifications

Characteristic	Specification
Temperature	
Operating	10º to 40ºC (50º to 104ºF)
Non-operating	-40º to 66ºC (-40º to 151ºF)
Recommended operating temperature	20º to 30º C (68º to 86º F)
Temperature shock immunity - maximum rate of change	10º C per hour (50º F)
Humidity	
Operating	20% to 80% RH non-condensing
Non-operating	10% to 95% RH non-condensing
Altitude	
Operating	-152.4 to 9144m (-500 to 30,000 ft)

Tape Drive

Table 23 provides the requirements necessary to operate your autoloader configured with an SDLT-600 tape drive.

Table 23 SDLT-600 Tape Drive Specifications

Description	SDLT-600
Read/write transfer rate: maximum sustained	Non-compressed mode:36 MBps Compressed (2:1 typical): 72 MBps
Burst transfer rate	160 MBps
Average access time	79 seconds
Loading time to BOT (for previously written tape)	12 seconds

Table 23 SDLT-600 Tape Drive Specifications

Description	SDLT-600
Unloading time from BOT	12 seconds
MTBF	250,000 hours
Interface type	LVD Ultra-2 SCSI

Media

Regarding media, observe these general rules:

- Use only drive-appropriate formatted cartridges. Formatted cartridges contain embedded servo code, written on the media, during the cartridge manufacturing process. Cartridges cannot be bulk erased or degaussed.
- Clean the tape drive when the Clean Drive LED is illuminated. Be sure to use only drive-appropriate cleaning cartridges.

Table 24 provides the media requirements necessary to use the SDLT-600 tape drive.

Table 24 Super DLTtape II Media Specifications

Characteristic	Super DLTtape II Media
Super DLTtape II format capacity	300 GB (non-compressed) 600 GB (2:1 typical compression)
Basic description	Advanced metal powder
Tape length	630m (2,066 ft)
Cartridge dimensions	104.1 x 104.1 x 25.4 mm (4.1 x 4.1 x 1.0 in.)
Shelf life	30 years minimum @ 20° C, 40% RH (non-condensing)
Cartridge life	1,000,000 passes (approximately 2000 full backup or restore operations)
Cleaning	20 uses

Index

D

E

F

G

H

I

L

M

N

O

P

R

S

T

U

V

W

A

B

C

D

E

F

G

H

I

L

M

N

O

P

R

S

T

U

V

W