

# Installation and Operating Guide

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## FastStor



 Advanced Digital Information Corp

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# Regulatory Notices

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## FCC Notices (USA Only)

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna.

Relocate the equipment with respect to the receiver.

Move the equipment away from the receiver.

Plug the equipment into a different outlet so that the equipment and the receiver are on different branch circuits.

If necessary, consult a representative of ADIC or an experienced radio/television technician for additional suggestions. You may find the following booklet helpful: FCC Interference Handbook, 1996, available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00450-7.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

**A Notice About Shielded Cables: Use only shielded cables for connecting peripherals to this device to reduce the possibility of interference with radio and television reception. Using shielded cables ensures that you maintain the appropriate FCC radio frequency emissions compliance (for a Class A device) or FCC certification (for a Class B device) of this product.**

The following information is provided on the device or devices covered in this document in compliance with FCC regulations:

*Product Name:* DLT Autoloader  
*Model number:* FS-DLT Autoloader  
*Company name:* Advanced Digital Information Corporation  
PO Box 97057  
Redmond, WA 98073-9757 USA  
(425) 881-8004

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## IC Notice (Canada Only)

Most tape libraries are classified by the Industry Canada (IC) Interference-Causing Equipment Standard #3 (ICES-003) as Class B digital devices. To determine which classification (Class A or B) applies to your tape library, examine all registration labels located on the bottom or the back panel of your library. A statement in the form of "IC Class A ICES-3" or "IC Class B ICES-3" will be located on one of these labels.

Note that Industry Canada regulations provide that changes or modifications not expressly approved by the tape library manufacturer could void your authority to operate this equipment.

**This Class B (or Class A, if so indicated on the registration label) digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.**

**Cet appareil numérique de la Classe B (ou Classe A, si ainsi indiqué sur l'étiquette d'enregistrement) respecte toutes les exigences du Règlement sur le Matériel Brouilleur du Canada.**

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## EN 55022 Compliance (Czech Republic Only)

This device belongs to category B devices as described in EN 55022, unless it is specifically stated that it is a category A device on the specification label. The following applies to devices in category A of EN 55022 (radius of protection up to 30 meters). The user of the device is obliged to take all steps necessary to remove sources of interference to telecommunication or other devices.

Pokud není na typovém štítku uvedeno, že spadá do třídy A podle EN 55022, spadá automaticky do třídy B podle EN 55022. Pro zařazení zařízení do třídy A (ochranné pásmo 30m) podle EN 55022 platí následující. Dojde-li k rušení telekomunikačních nebo jiných zařízení, je uživatel povinen provést takové opatření, aby rušení odstranil.

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## CE Notice

Marking by the symbol **CE** indicates compliance of this tape library to the EMC (Electromagnetic Compatibility) directive of the European Community. Such marking is indicative that this tape library meets or exceeds the following technical standards:

EN 55022 — “Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment.” This system is an EN 55022 Class B device.

EN 50081-1 — “Electromagnetic compatibility—Generic emission standard Part 1: Residential, commercial, and light industry.”

EN 50082-1:1997 — “Electromagnetic compatibility—Generic immunity standard Part 1: Residential, commercial, and light industry.”

EN 61000-3-2 — “Harmonic current emissions test.” — Device Class A.

EN 61000-3-3 — “Voltage fluctuations and flicker in low-voltage supply systems test.”

EN 61000-4-2 — “Electrostatic discharge immunity test.” — Severity level 3.

EN 61000-4-3 — “Radiated, radio-frequency, electromagnetic field immunity test.” — Severity level 2.

EN 61000-4-4 — “Electrical fast transient/burst immunity test.” — Severity level 2.

EN 61000-4-5 — “Surge immunity test.” — Severity level 2.

EN 61000-4-6 — “Immunity to conducted disturbances, induced by radio-frequency fields.” — Severity level 2.

EN 61000-4-8 — “Power frequency magnetic field immunity test.” — Severity level 2.

EN 61000-4-11 — “Voltage dips, short interruptions and voltage variations immunity test.” — Performance criteria B and C.

ENV 50204 — “Radiated electromagnetic field from digital radio telephones.”

EN 60950:1992 + Amd.1:1993 + Amd.2:1993 with considerations to Amd.3:1995 — “Safety of Information Technology Equipment including Electrical Business Equipment.”

A “Declaration of Conformity” in accordance with the preceding standards has been made and is on file at ADIC Europe, ZAC de Basses Auges, 1, rue Alfred de Vigny, 78112 Fourqueux, FRANCE.

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## VCCI Notices (Japan Only)

This is a Class B product based on the standard of the Voluntary Control Council for Interference for information technology equipment. If this equipment is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

Note that VCCI regulations provide that changes or modifications not expressly approved by the tape library manufacturer could void your authority to operate this equipment.

# DECLARATION OF CONFORMITY

according to EN 45014

**Manufacturer's Name:** Advanced Digital Information Corporation

**Manufacturer's Address:** 11431 Willows Road                      ZAC des Basses Auges  
Redmond, Washington 98052                      1, rue Alfred de Vigny  
USA                                                              78112 Fourqueux,  
FRANCE

**declares, that the product:**

**Product  
(Produit, Erzeugnis):** FastStor

**Model Numbers  
(Marque Commercial,  
Warenbezeichnung):** FastStor FS-DLT 4000  
FastStor FS-DLT 7000  
FastStor FS-DLT 8000

**conforms to the following international standards,**

**Emissions:** EN 50081-1, EN-55022 Class B

**Immunity:** EN 50082-1

**Safety:** EN 60950

**Quality:** ISO 9001

**Supplementary Information:**

**Signature:** Signature on File

**Signature:** Signature on File

**Full Name:** \_\_\_\_\_

**Full Name:** \_\_\_\_\_

**Position:** \_\_\_\_\_

**Position:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Place:** Redmond, WA USA

**Place:** Fourqueux, FRANCE

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# Safety Notices

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## Warnings



This symbol should alert the user to the presence of "dangerous voltage" inside the product that might cause harm or electric shock.

### CAUTION

**RISK OF ELECTRIC SHOCK  
DO NOT OPEN**

**CAUTION :** TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

### Caution

All safety and operating instructions should be read before this product is operated, and should be retained for future reference. This unit has been engineered and manufactured to assure your personal safety. Improper use can result in potential electrical shock or fire hazards. In order not to defeat the safeguards, observe the following basic rules for its installation, use and servicing.

Heed Warnings - All warnings on the product and in the operating instructions should be adhered to.

Follow Instructions - All operating and use instructions should be followed.

Ventilation - The product should be situated so that its location or position does not interfere with proper ventilation.

Heat - The product should be situated away from heat sources such as radiators, heat registers, furnaces, or other heat producing appliances.

Power Sources - The product should be connected to a power source only of the type directed in the operating instructions or as marked on the product.

Power Cord Protection - The AC line cord should be routed so that it is not likely to be walked on or pinched by items placed upon or against it, paying particular attention to the cord at the wall receptacle, and the point where the cord exits from the product.

Object and Liquid Entry - Care should be taken to insure that objects do not fall and liquids are not spilled into the product's enclosure through openings.

Servicing - The user should not attempt to service the product beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

---

## Precautions

Do not use oil, solvents, gasoline, paint thinners or insecticides on the unit.

Do not expose the unit to moisture, to temperatures higher than 60°C (140°F) or to extreme low temperatures.

Keep the unit away from direct sunlight, strong magnetic fields, excessive dust, humidity and electronic/electrical equipment, which generate electrical noise.

Hold the AC power plug by the head when removing it from the AC source outlet; pulling the cord can damage the internal wires.

Use the unit on a firm level surface free from vibration, and do not place anything on top of unit.

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# Table of Contents

Copyright Notice .....	ii
Copyright Notice (Europe) .....	iii
Regulatory Notices .....	iv
Safety Notices .....	vii
Quick Start Guide .....	xi
Chapter 1 Introduction .....	1
Equipment Description .....	2
Features .....	3
DLT Drives .....	4
Options .....	4
SCSI Interface .....	4
Switches and Indicators .....	5
DLT Media .....	9
Other Requirements .....	10
SCSI Host Adapter .....	10
Application Software .....	10
Chapter 2 Hardware Installation .....	11
Unpacking and Inspecting .....	12
Checking the Accessories .....	12
Installing the Host Adapter .....	12
Installing the SCSI Cable and Terminator .....	13
Connecting More than One FastStor .....	14
Preparing the Host Computer System .....	14
Installing the Application Software .....	14
Chapter 3 Operation and Maintenance .....	15
Normal Operations .....	16
General Guidelines .....	16
Powering on the System .....	16
Power Up Checks .....	17
Setting the SCSI IDs .....	17
Prepare and Install the Data Cartridges .....	19
Close and Lock the Front Door .....	20
Drive Status Messages .....	20
FastStor Modes .....	21
Mode 1A – LOAD DRV .....	22
Mode 1B – EJECT DRV .....	23
Mode 2 – LOAD SLOT .....	24
Mode 3 – EJECT SLOT .....	25
Mode 4 – EJECT PCKR .....	26
Mode 5 – DENSITY .....	27
Mode 6 – SET SCSI ID .....	28
Normal Maintenance .....	30
Cleaning the Drive Head .....	30
Cleaning Tape .....	30
Drive Head Cleaning Procedure .....	31
Cleaning the Enclosure .....	32
Chapter 4 Troubleshooting and Diagnostics .....	33
Installation Problems .....	34
Loader and Drive Operational Problems .....	34
DIAGNOSTIC MENU .....	34
DISPLAY FIRMWARE .....	35
SIGN ON .....	38
CHANGE MODE .....	38
CYCLE TEST .....	39
CLEAN DRIVE .....	40
AUTOCLEAN .....	42
Enabling AUTOCLEAN .....	42
Using AUTOCLEAN .....	43

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Disabling AUTOCLEAN.....	43
LOAD FIRMWARE.....	44
DISPLAY COUNTS.....	44
UPGRADE DRIVE FIRMWARE.....	46
FastStor Error Messages.....	48
Error Message Listing.....	48
Environmental Considerations.....	49
When You Call ADIC'S Technical Assistance Center.....	49
Appendix A Specifications.....	51

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## Quick Start Guide

### This Guide ...

- provides a quick guide for experts who are familiar with installing hardware and software.

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Follow these steps to quickly get started using your ADIC FastStor:

**Notes**

The following defaults have been set at the factory, and in most cases, should not have to be changed.

LDR SCSI ID: 1, DRV SCSI ID: 3

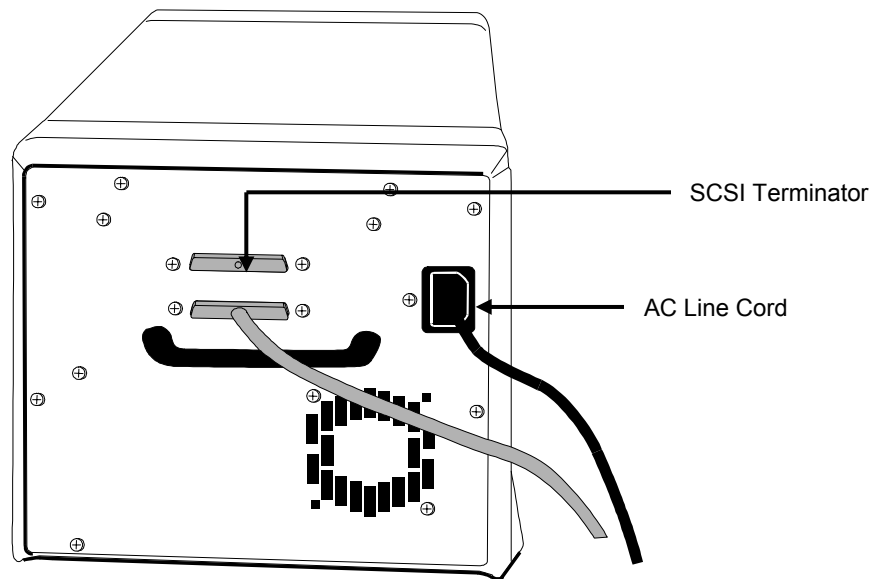
FastStor DLT 4000 Tape Density: 406B

FastStor DLT 7000 Tape Density: 706B

FastStor DLT8000 Tape Density: 806B

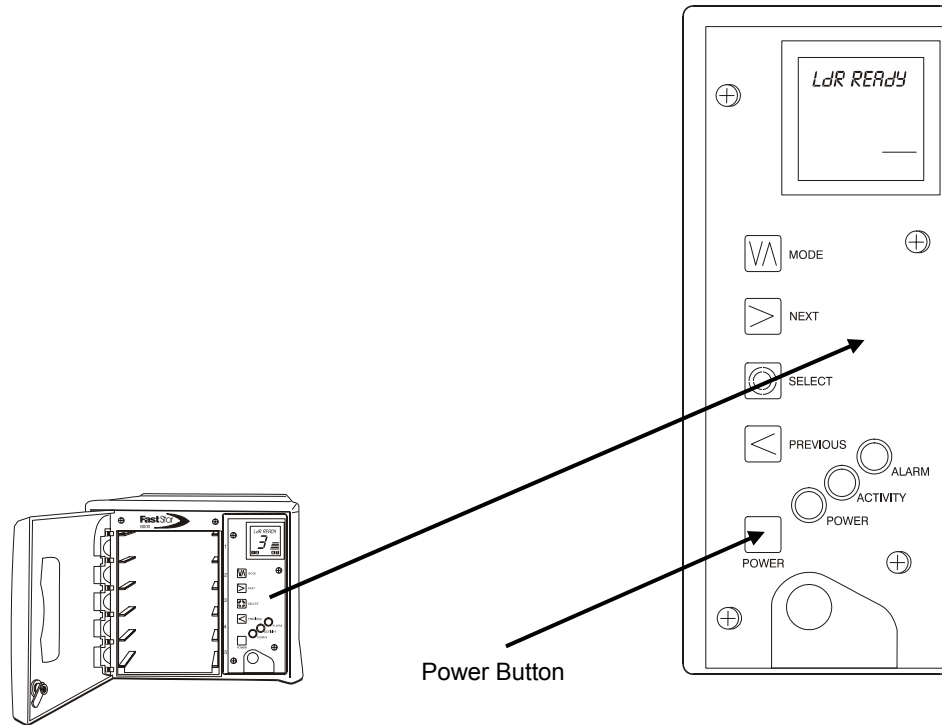
Operating Mode: Random

Logon String: FastStor

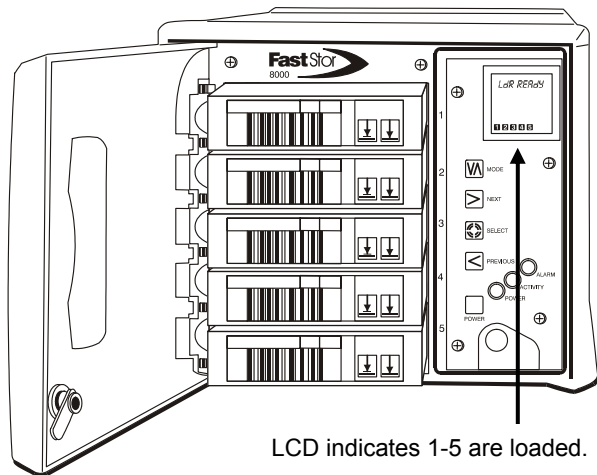


1. Install AC line cord, first to FastStor, then to AC outlet.
2. Install SCSI terminator on FastStor.

3. Power up your FastStor by pressing the Power button.

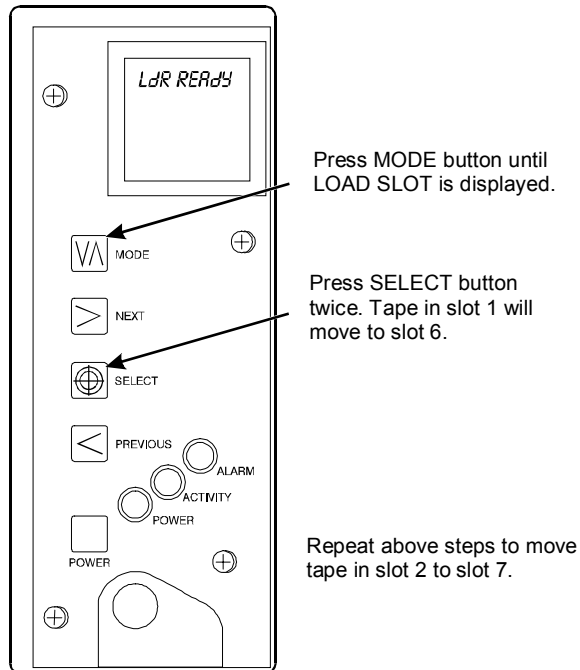


4. Install data cartridges in slots 1 through 5 of your FastStor.

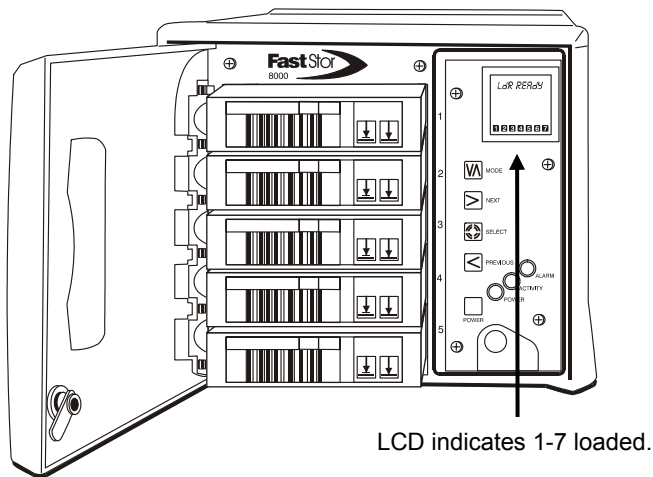


LCD indicates 1-5 are loaded.

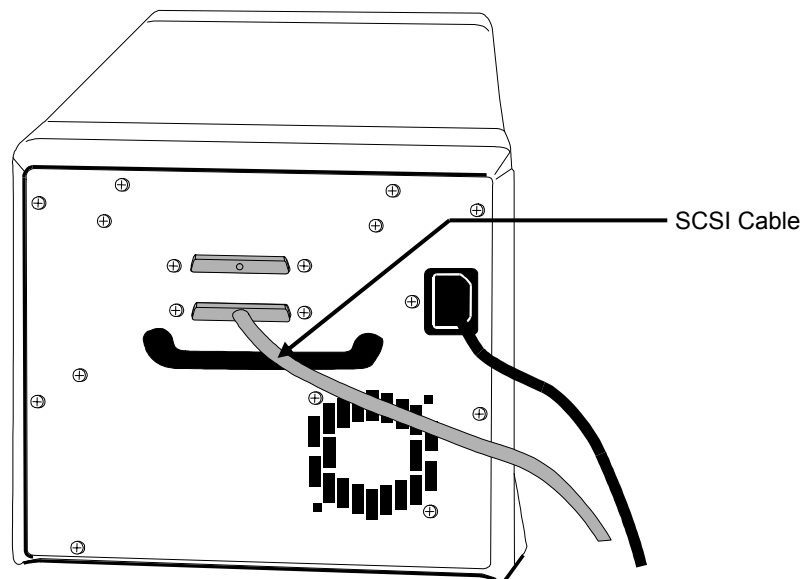
5. Using the Mode Menu, move the cartridge from slot 1 to slot 6, and from slot 2 to slot 7.



6. Install additional data cartridges in slots 1 and 2.



- 
7. Connect SCSI cable to rear of FastStor and to SCSI adapter on your host computer.



8. Power up your host computer.
9. Verify your backup software.

Your ADIC FastStor is ready for operation.

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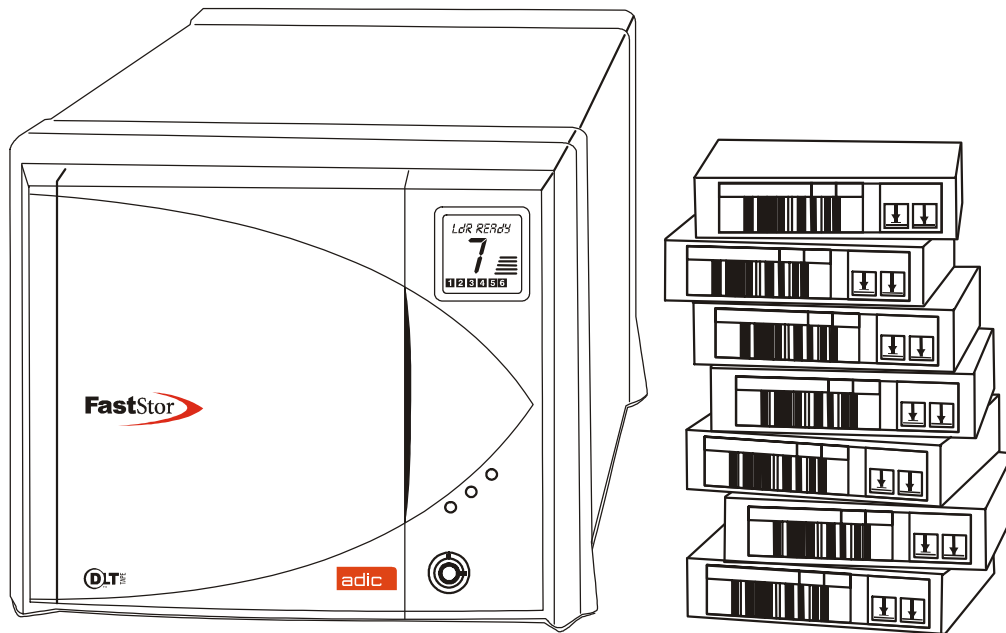
# Chapter 1

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## Introduction

### This Chapter ...

- provides a physical description of the switches, indicators and connectors on the front and rear panels of the external FastStor
- describes the drive and media used in the FastStor
- describes other requirements (additional hardware and/or software) needed to utilize the FastStor
- provides a brief overview of the FastStor features. For detailed specifications, see Appendix A



**W**elcome to your ADIC FastStor (shown above). Your FastStor is a fully automated, high-performance, high-capacity, mass storage system. The FastStor is designed to provide you with unattended, near-line and off-line data storage, archiving, backup, hierarchical storage management (HSM), and retrieval for low- and mid-range servers and networks. Through the remainder of this manual, references will be made to the FastStor. Except in model-specific instances (the reference will be made to the proper model), the information is applicable to all models of the family.

---

## Equipment Description

The FastStor (FastStor DLT 4000, FastStor DLT 7000, FastStor DLT 8000) is a three-model family of SCSI compatible and economical data storage devices. All models incorporate a streaming tape cartridge data storage device, which features high capacity, high throughput, and data compression. Equipped with a Quantum<sup>®</sup> DLT<sup>™</sup> drive, your FastStor operates as two SCSI devices on a single SCSI bus. Your FastStor can contain up to 7 data cartridges providing a maximum formatted capacity of 560 GB and a sustained data transfer rate as high as 720 MB per minute. The tape media is rated at up to 1,000,000 passes and has a shelf life of 30 years, providing superior media durability and data reliability.

The FastStor is compatible with all operating systems and environments supporting the SCSI interface, but requires either direct support of the operating system or a suitable application program to take advantage of its features. Hosting environments that do not directly support SCSI interfaces, like most personal computers, require the addition of a SCSI Host Adapter card.

Your FastStor is capable of operating in either Random-Access or Sequential-Access modes. In Random-Access mode, the application software controls cartridge management. In Sequential-Mode, your FastStor operating firmware predefines cartridge management. Refer to the *Change Mode* section in *Chapter 4 Troubleshooting and Diagnostics*, for a detailed description of Sequential-Mode operation.

---

## Features

- ❑ **Multi-function Operator Panel.** The Operator Panel, located to the right, under the front door, employs a 1-line by 10-character liquid crystal display (LCD), a four-key keypad, and three LEDs to permit you to monitor and control the operations of your library. Specific areas of the LCD provide you with information such as: status of the tape storage slots (empty, or data cartridge present); which cartridge is loaded into the drive; status of the cartridge in the drive (write-protected or data compression enabled); and inform you when the drive requires cleaning.
- ❑ **Media Transporter.** The Media Transporter is the media cartridge handling mechanism and normally responds to commands from the application software to move the cartridges between the storage slots and the drive. Employing a bi-directional, pass-through gripper, the Media Transporter picks and places cartridges to/from the front and rear mounted storage slots.
- ❑ **Scalar Emulation.** To maximize application software compatibility, your FastStor shares the same command set as the ADIC Scalar library, and can appear as either a FastStor or a Scalar.
- ❑ **System Integrity.** The cartridge storage slots, drive, and robotics are protected by a physically lockable door.
- ❑ **Cleaning Cartridge.** Although the cleaning cartridge can occupy a cartridge storage slot in the FastStor (facilitating automated cleaning cycles), manual insertion of a cleaning cartridge is permitted by opening the front door and installing the cleaning cartridge into any unoccupied storage slot. The Operator Panel is then used to load/unload the cleaning cartridge to/from the drive.
- ❑ **Manual Cartridge Use.** Individual cartridges can easily be transported to the drive by manually opening the front door and installing the cartridge into any unoccupied storage slot. The Operator Panel is then used to load cartridges to the drive.
- ❑ **Cartridge Pre-Check.** Whenever you power up your FastStor it will scan the cartridge storage slots and the drive and build a log of valid cartridge locations.
- ❑ **Reverse Cartridge Protection.** The five front cartridge storage slots employ a design that prevents the cartridges from being inserted incorrectly.
- ❑ **Built-in Diagnostics.** Your FastStor includes diagnostic firmware that tells you when drive head cleaning is required, reports diagnostic results, and drive operating status.
- ❑ **Barcode Ready.** The available barcode reader option delivers instant media verification and inventory.
- ❑ **24 Hour Fast Exchange.** In the event your FastStor needs to be serviced, ADIC will provide you with a next day advanced exchange to reduce down time.

---

## DLT Drives

Your ADIC FastStor is equipped with a third-, or fourth-generation DLT drive. The DLT4000 and DLT7000 drives can read and write 2.6 GB, 6.0 GB, and 10.0 GB tape formats for 100% interchange compatibility with earlier DLT drives. The DLT 8000 drive can read and write 10.0, 15.0, 20.0, and 35.0 GB tape formats for 100% interchange compatibility with the DLT 2000, DLT 2000xt, DLT 4000, and DLT 7000 drives. DLT 8000 default tape density is 40 GB (80 GB compressed) when using the DLTape IV data cartridge. Tape density is selectable by the application software or via the Operator Panel..

Model	Drive Model	Cartridge Max Capacity (density - compressed mode)	Max Capacity (compressed mode)	Sustained Transfer Rate (compressed mode)
FastStor DLT4000	DLT4000	20 GB (DLTape III)	140 GB	3.0 MB/sec (180 MB/min)
		30 GB (DLTape IIIXT)	210 GB	
		40 GB (DLTape IV)	280 GB	
FastStor DLT7000	DLT7000	20 GB (DLTape III)	140 GB	10.0 MB/sec (600 MB/min)
		30 GB (DLTape IIIXT)	210 GB	
		70 GB (DLTape IV)	490 GB	
FastStor DLT8000	DLT8000	20 GB (DLTape III)	140 GB	12.0 MB/sec (720 MB/min)
		30 GB (DLTape IIIXT)	210 GB	
		80 GB (DLTape IV)	560 GB	

*Maximum Capacity and Sustained Transfer Rates*

---

## Options

### SCSI Interface

The FastStor is equipped with a Quantum manufactured drive and a corresponding robotics interface. The drive and robotics may have Single-Ended (SE), Low Voltage Differential/Single-Ended (LVD/SE), or High Voltage Differential (HVD) SCSI interface.

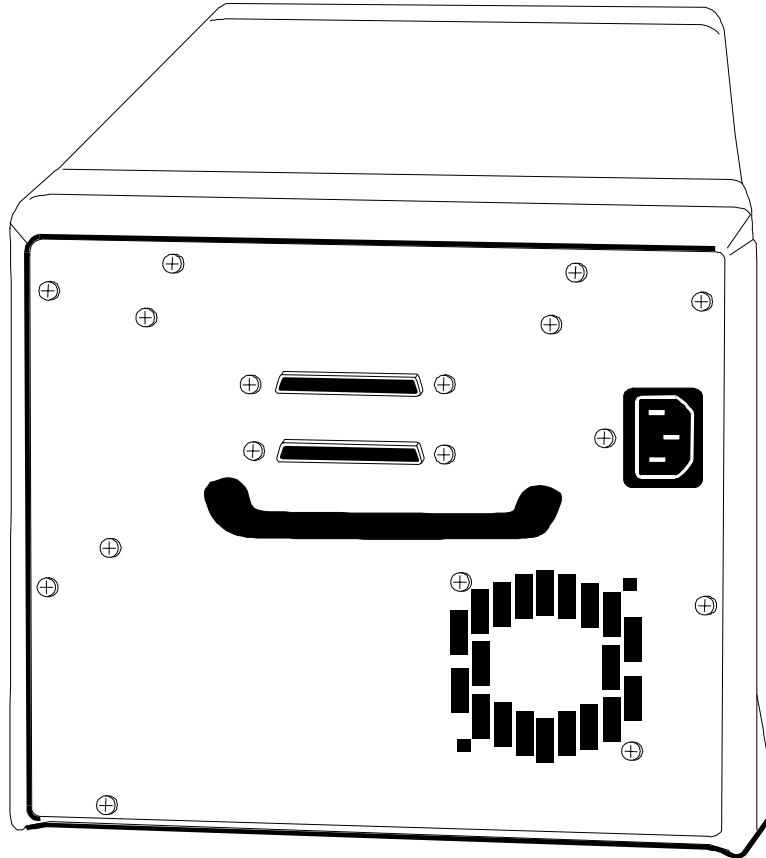
**Caution**

**SE and LVD/SE SCSI devices are not compatible with HVD SCSI devices.  
Equipment damage may occur if you connect your FastStor to an  
incompatible SCSI bus.**

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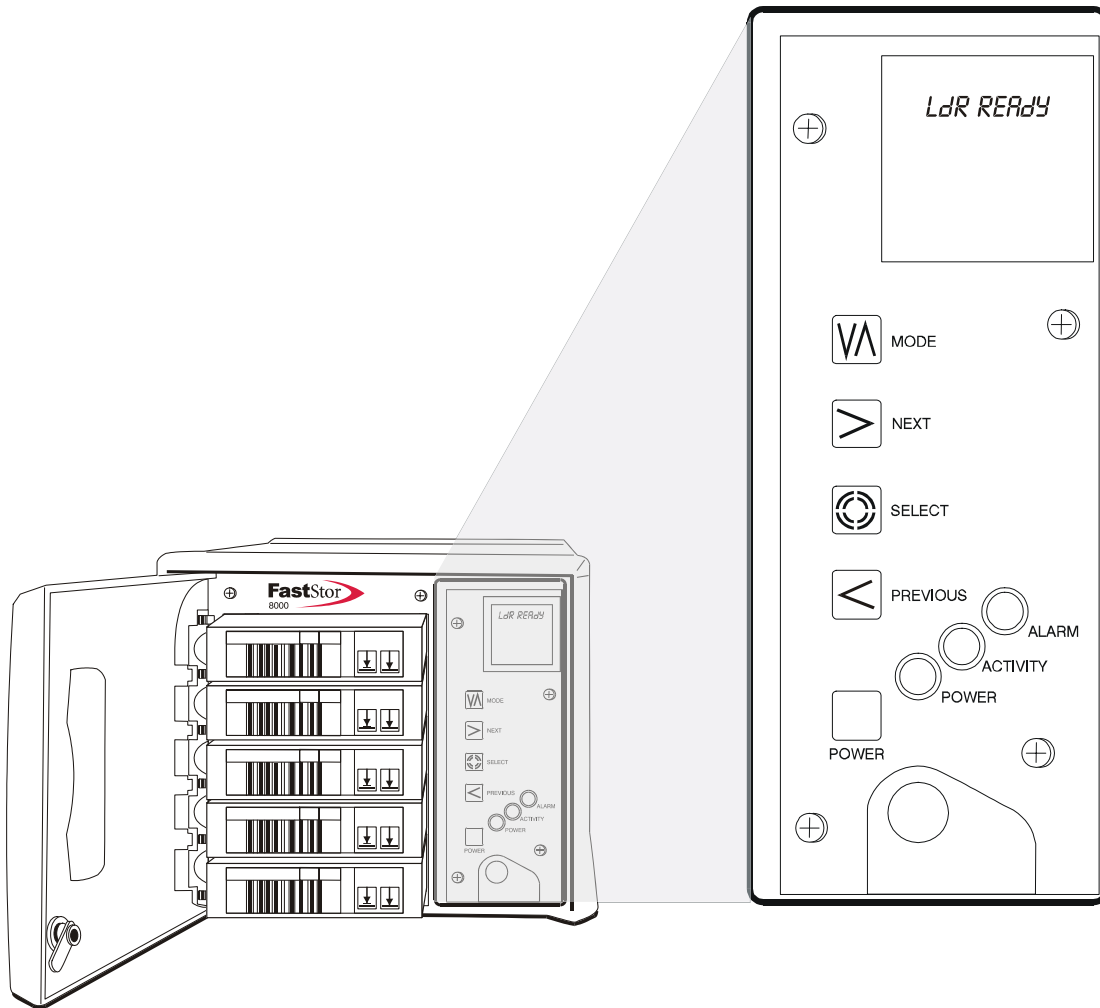
## Switches and Indicators

The following figures shows the switches and indicators located on the front and rear panels of the FastStor.



*FastStor Series Rear Panel*

<b>AC Power Connector</b>	Receptacle for AC power cord.
<b>SCSI Channel Connectors</b>	Connections for the interface cable that connect the unit with the host computer and/or to other devices on the SCSI channel (including additional FastStor units). The interface cable can be attached to either connector.



*FastStor Series Front Panel*

#### Indicators

<b>Power LED</b> (green)	Illuminates when power is on.
<b>Activity LED</b> (blinking amber)	Indicates robotic and drive activity. A slow blinking interval indicates FastStor robotic activity and a fast interval indicates drive activity.
<b>Alarm LED</b> (red)	Illuminates whenever an error has occurred.
<b>LCD</b>	1-line by 10-character Liquid Crystal Display. Displays information about drive status, operational messages, and error messages.

---

The following illustration shows the layout of the LCD. The normal on-line message (LdR REAdY) is displayed on the top line. On-line, off-line, and error messages appear on this line.

**DC** indicates that data compression is selected on the drive.

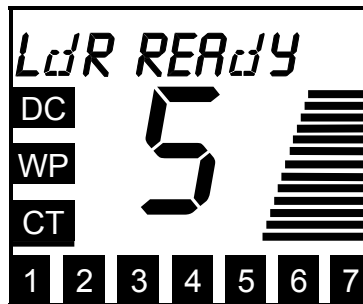
**WP** indicates that a write-protected data cartridge is loaded into the drive.

**CT** indicates that the drive head needs to be cleaned.

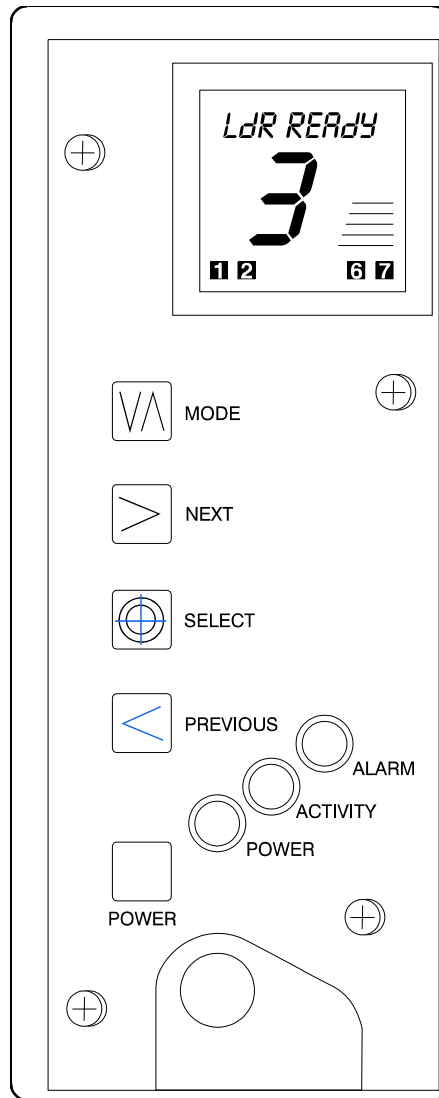
The large numeric field in the center of the display normally indicates which cartridge is loaded into the drive. Whenever an error occurs an *E* will appear in this field and the error message will appear on line 1 of the display (see chapter 4 for descriptions of the possible error messages).

The Activity Bars on the right side of the display, in conjunction with the Activity LED, indicate robotic and drive activity. A blinking bottom bar is displayed when no activity is taking place. A slow interval between the bars appearing/disappearing indicates robotic activity, and a fast interval indicates drive activity.

The seven numeric fields at the bottom of the display indicate the current cartridge inventory. Each will appear only if a cartridge is present in the appropriate storage slot.



*Operator Panel LCD*



*FastStor Series Operator Panel*

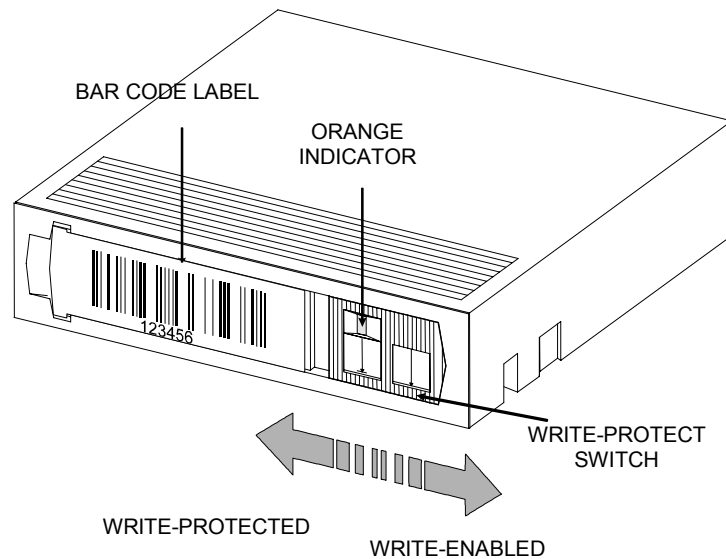
<b>Keypad</b>	
<b>MODE</b>	Press this button to enter or exit off-line mode menus.
<b>NEXT</b>	Selects next item or value in the currently displayed menu.
<b>SELECT</b>	Causes the FastStor to execute the current menu (displayed on line 1 of the LCD).
<b>PREVIOUS</b>	Selects previous item or value in the currently displayed menu.
<b>POWER</b>	Press and release this button to turn on your FastStor. Press and hold this button for 2 seconds to turn off your FastStor. POWER dOWN will appear on the LCD and the Activity Bars (see Indicators above) and Activity LED will indicate robotic activity as the Picker moves to it's power down position.



---

## DLT Media

The data cartridges used in the DLT drive are housed in 4-inch plastic cases and employ ½-inch metal particle tape.



### *DLT Data Cartridge*

The write-protect switch is used to prevent recording over existing data. To prevent recording or deleting, place the write-protect switch to the open position. The drive senses the position of the switch and will not allow writing in this position. When installing cartridges in the FastStor, place the switch in the closed position (unless you do not wish to record on a specific cartridge).

If the switch is moved all the way to the left, the cartridge is write-protected and the drive cannot write to, or erase data from, the cartridge. The small orange rectangle will be visible whenever the cartridge is write-protected. Additionally, an arrow (beneath the orange rectangle and above the two lines on the switch) lets you know that data cannot be written to the cartridge. If the switch is moved all the way to the right, the cartridge is write-enabled and the drive can write data to, or erase data from, the cartridge. The orange rectangle will not be visible whenever the cartridge is write-enabled. On the right side of the write-protect switch an arrow over one line indicates that if you slide the switch to the right, data can be written to the cartridge.

#### **Notes**

Store data cartridges in a dry, cool environment.

Never reset or power down your computer or FastStor while a function is in process or a tape is moving.

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## Other Requirements

### SCSI Host Adapter

Your FastStor must be connected to either an integrated SCSI host or a separate SCSI interface (host adapter) card installed in the computer – either directly to the I/O connector on the card or as part of an existing SCSI chain. The host adapter you choose will depend on your system requirements and your needs. If you are not sure about your host adapter requirements, please call ADIC's Technical Assistance Center (ATAC) and ask for assistance. The SCSI interface must be installed before you connect the FastStor.

### Application Software

A variety of backup and data storage software is available for use with your FastStor. The software you use will depend upon your storage needs and the system you are using. Please check with ADIC Sales or Customer Assistance if you have a question on the compatibility of a particular software package.

Now you are ready to connect the FastStor to your host computer. Follow the instructions provided in the next chapter.

# Chapter 2

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## Hardware Installation

This Chapter. . .

- explains the steps necessary to install and test your FastStor

---

For the most part, installation is simply a matter of checking all necessary SCSI connections, installing the application software (backup or otherwise) on the host computer, and applying power. The FastStor defaults set at the factory should be sufficient for most applications.

---

## Unpacking and Inspecting

**Caution**

If the operating environment differs from the storage environment by 15° C (30° F) or more, let the unit acclimate to the surrounding environment for at least 12 hours.

Unpack all items from the carton. Save the packing materials in case you need to move or ship the system in the future.

**Caution**

You must ship the FastStor in the original or equivalent packing materials or your warranty may be invalidated.

---

## Checking the Accessories

Check to make certain that the following items are included with your FastStor:

- Power cord
- One cleaning cartridge, or a coupon for a free DLT cleaning cartridge
- One SCSI cable with 68-pin HD/ 68-pin HD connectors
- One active 68-pin SCSI bus terminator
- A Media Carrying Tote with plastic lid
- This manual
- A Quick Reference Guide
- A Warranty Registration card
- Two keys for the front door
- ✓ None of the items should show signs of damage.

---

## Installing the Host Adapter

At this point if your host computer system does not have native SCSI capability and the host adapter you are using is not installed, please install it. Refer to the manual that came with your host adapter for specific directions.

When the host adapter card is installed return to this point in the manual.

---

## Installing the SCSI Cable and Terminator

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### Notes

Make sure that the interface cable you are planning on using has the appropriate connectors on each end. The FastStor employs a 68-pin high-density SCSI connector on the rear panel.

If your host computer's SCSI connector is different from that on the FastStor, you will need to obtain an adapter or a different cable. Consult your dealer or ATAC if you need help.

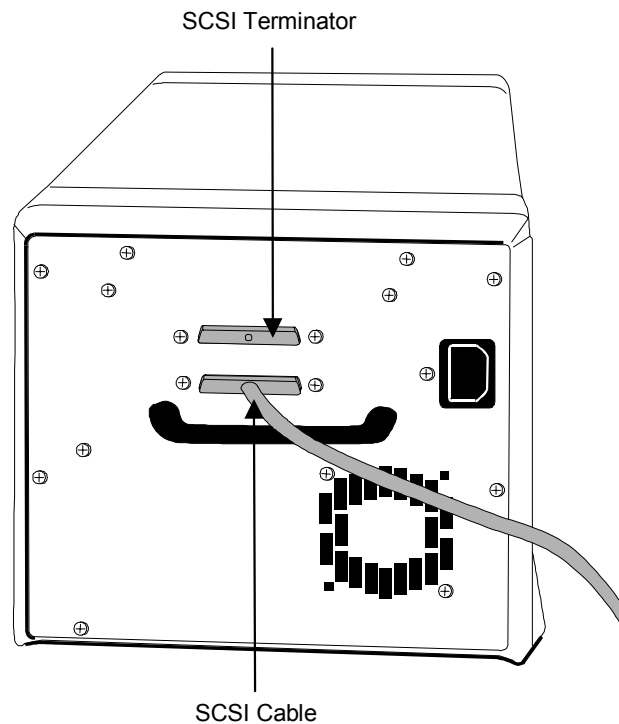
The interface cable must be shielded – ADIC can supply you with the correct type.

- If your FastStor is the last device on the SCSI bus, install the SCSI terminator onto the remaining SCSI connector on the rear panel of the FastStor.

### Note

SCSI bus TERM POWER is supplied by the robotics interface, not by the drive.

- Connect the SCSI cable to either of the SCSI connectors on the rear panel of the FastStor.



*FastStor Rear Panel*

- Connect the free end of the SCSI cable to the connector on the host computer's SCSI adapter.
- If you wish to connect one or more additional devices to the bus after the FastStor, connect an appropriate cable between the remaining SCSI connector on the rear panel of the FastStor and the next device.
- Be sure that the bus is terminated at the last device in the chain.

### Note

ADIC recommends that you always terminate a single-ended SCSI bus with an active terminator.

- Make sure that the SCSI cable between the host adapter and the FastStor is secure and the connections are fastened correctly.

---

## Connecting More than One FastStor

If you are connecting more than one FastStor on the same SCSI channel, simply connect each unit to the previous unit with an additional shielded interface cable. It does not matter which SCSI connector on each FastStor you connect the interface cable to. Make sure that you configure each FastStor unit with a unique drive SCSI ID and loader ID. Your FastStors will not function properly if they have the same SCSI IDs.

---

## Preparing the Host Computer System

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### Installing the Application Software

At this point you need to refer to your software installation guide for instructions on installing the backup/controlling software for the FastStor onto the host computer.

# Chapter 3

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## Operation and Maintenance

### This Chapter. . .

- describes normal operating features of your FastStor
- provides details on the media and drive head cleaning cartridge
- explains normal maintenance procedures

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## Normal Operations

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### General Guidelines

Once your FastStor and your choice of application software are installed and configured, you can automatically perform backup and restore operations through the application software. You do not need to intervene unless you need to replace cartridges.

Always follow these general operating guidelines:

- Do not open the front door of the FastStor unless you must perform manual Mode commands, or change media.
- Use only the recommended types of media cartridges, described earlier in this manual.
- Clean the DLT drive whenever the **CT** field appears on the LCD (signifying a cleaning request), or as soon possible.

**Note**

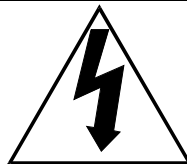
Never insert or remove cartridges from the storage slots unless LdR REAdY is displayed on the LCD.

---

### Powering on the System

The two keys for the front door are taped to the rear panel of your FastStor model.

- Remove the keys from the rear panel, unlock and open the front door.
- Remove the foam shipping block from the cartridge area.
- Plug the power cord into the AC receptacle on the rear panel of your FastStor.
- Plug the power cord from the FastStor into a grounded electrical outlet.



**Use caution when plugging the power cord into an electrical outlet.  
Hazardous voltages are present in the sockets of the outlet.**

- Plug the power cord from your host computer into a grounded electrical outlet.
- Turn on power to the FastStor by pressing the **POWER** button on the Operator Panel.

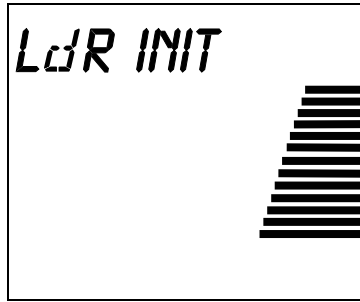
**Note**

When powering off your FastStor, you must press and hold the POWER button for 2 seconds.

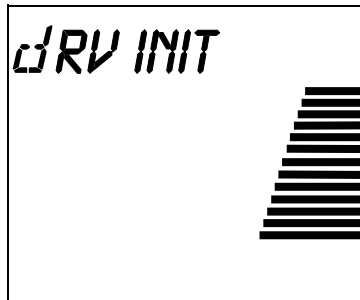


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While the FastStor initializes, the LCD will appear as shown below. The Activity LED will blink slowly, and the Activity Bars will appear on the LCD.



At the completion of FastStor initialization, the drive will initialize and the LCD will appear as shown below. The Activity LED will blink fast, and the Activity Bars will appear on the LCD.



At the conclusion of drive initialization, the LCD will appear as shown below:



## Power Up Checks

When you apply power to your FastStor it will perform the following actions:

- Verify drive configuration and status.
- Build a valid cartridge inventory log.
- Calibrate the Media Picker.

When the FastStor has completed the Power Up Checks, the LCD will display LdR REAdY.

---

## Setting the SCSI IDs

### **Notes**

The default settings for the SCSI IDs are: LdR Id 1, and dRV Id 3.

SCSI ID changes **are not** effective until power has been cycled on the FastStor.

---

Your FastStor consists of two SCSI devices; the drive and the robotics. Depending upon your requirements, you may need to change the SCSI ID default settings for your installation. To change the SCSI ID of the robotics and/or the drive, perform the following steps:

- Repeatedly press the **MODE** button on the Operator's Panel until SET SCSI (Mode 6) appears on the first line of the LCD.
- Press the **SELECT** button. LdR SCSI will now appear on the LCD.
- Press the **SELECT** button to select the robotics. LdR Id X (where X is the current SCSI ID of the robotics) will now appear on the LCD.
- Press the **NEXT** button to select a higher ID, or the **PREVIOUS** button to select a lower ID.
- Press the **SELECT** button to accept the new ID for the robotics. dRV SCSI will now appear on the LCD.
- Press the **SELECT** button. dRV Id X (where X is the current SCSI ID) will now appear on the LCD.
- Press the **NEXT** button to select a higher ID, or the **PREVIOUS** button to select a lower ID.
- Press the **SELECT** button to accept the new ID for the drive. CYCLE PWR (blinking) will now appear on the LCD for approximately 10 seconds.
- Press and hold the **POWER** button for 2 seconds to power down the FastStor.
- Wait a few seconds, then press the **POWER** button again to power up the FastStor. The new SCSI IDs are now in effect.

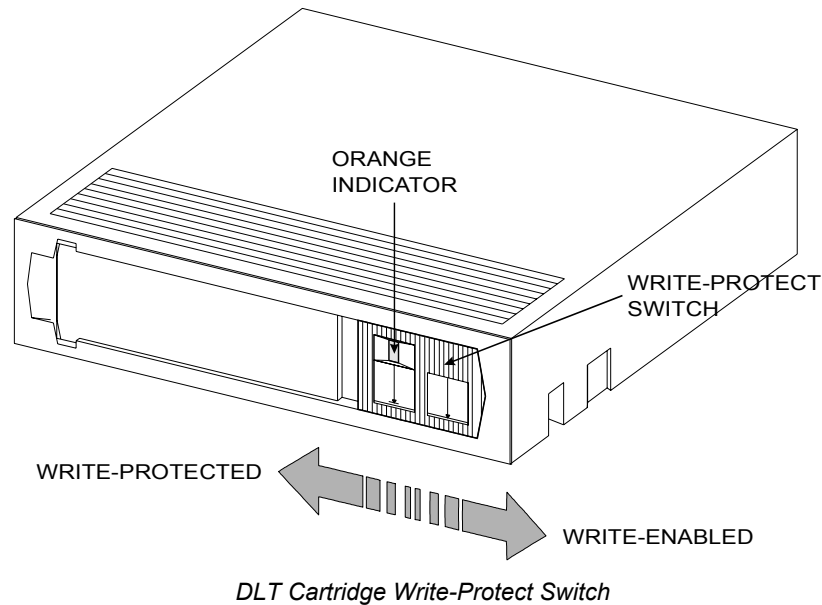
**Note**

You may need to power cycle your server and reconfigure your application software for them to see these new IDs as well.

---

## Prepare and Install the Data Cartridges

- If necessary, unlock and open the front door to access the cartridge storage slots.
- Make sure that the write-protect switch is set appropriately on each cartridge. Slide the switch to the appropriate position by pushing it with your finger.



Storage slot 6 and 7 are loaded from slots 1 and 2 respectively, using the Operator's Panel.

**Note**

Never insert or remove cartridges from the storage slots unless LdR REAdY is displayed on the LCD.

- Place data cartridges into slots 1 and 2.
- ✓ Verify that the LCD shows that slots 1 and 2 have tapes present.
- Press the **MODE** button on the Operator's Panel until LOAd SLOT (Mode 2) appears on the first line of the LCD.

**Note**

The LOAd SLOT command always moves the tape from slot 1 to slot 6, and slot 2 to slot 7.

- Press the **SELECT** button to select the LOAd SLOT command. SRC SLOT 1 will now appear on the LCD.
- Press the **SELECT** button to execute the LOAd SLOT command.

The FastStor will now move the tape (data cartridge or cleaning tape) from slot 1 to slot 6. While executing, the LdR MOVE, LdR PICK, and LdR PLACE messages will appear on the LCD. When the FastStor has completed the command, LdR REAdY will again appear on the LCD.

- ✓ Verify that the LCD now shows that slots 2 and 6 have tapes present.
- Press the **MODE** button on the Operator's Panel until LOAd SLOT (Mode 2) appears on the first line of the LCD.
- Press the **SELECT** button to select the LOAd SLOT command. SRC SLOT 2 will now appear on the LCD.
- Press the **SELECT** button to execute the LOAd SLOT command.

The FastStor will now move the tape from slot 2 to slot 7. While the command is executing, the Activity Bars will indicate loader activity, LdR MOVE, LdR PICK, and LdR PLACE messages will appear on the LCD, and the Activity LED on the Operator's Panel will blink slowly. When the FastStor has completed the command, LdR REAdY will appear on the LCD.

- Verify that the LCD now shows that slots 6 and 7 now have tapes present.

- 
- Install five additional cartridges into storage slots 1 through 5.
  - Verify that the LCD now shows that slots 1 through 7 have tapes present.

## Close and Lock the Front Door

Close the FastStor door, turn the key a quarter-turn clockwise and remove it from the lock.

- Turn on the host computer power and launch the software application.

The application will now control the FastStor. Use the Mode commands, described on the following pages, to manually perform FastStor functions.

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## Drive Status Messages

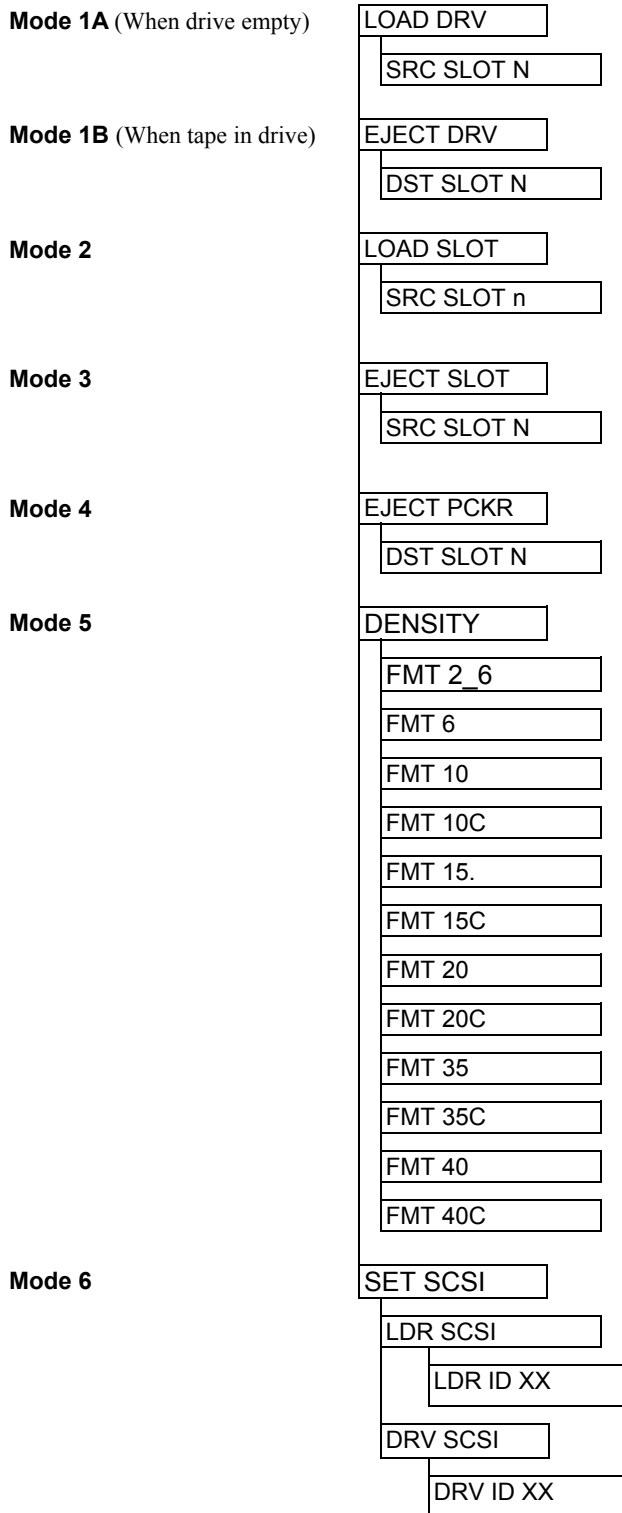
During on-line operation, your FastStor will place drive status messages on the top line of the LCD. The following table lists the messages that will appear on the LCD:

Drive Status Message	Description
<b>CALIBRATE</b>	Drive is calibrating head to tracks on tape
<b>EJECTING</b>	Drive is unloading tape
<b>CLEANING</b>	Drive is cleaning head with cleaning cartridge
<b>ERASING</b>	Drive is erasing tape
<b>READING</b>	Drive is reading tape
<b>WRITING</b>	Drive is writing to tape
<b>SEEKING</b>	Drive is seeking a position on tape
<b>REWINDING</b>	Drive is rewinding tape

---

# FastStor Modes

The following diagram is a quick reference guide to the Modes described on the next few pages.



- ❑ To access any of the Modes, press the **MODE** button repeatedly until the LCD displays the desired mode on line 1.

**Notes**

It is only possible to scroll forward through the Mode choices. If you pass the mode you desire, continue to press the **MODE** button until the mode you desire is again displayed on the LCD.

While accessing Modes 1-6, the FastStor is not available to your software application.

- ❑ To exit any of the Modes and return to LdR REAdY, press the **MODE** button.

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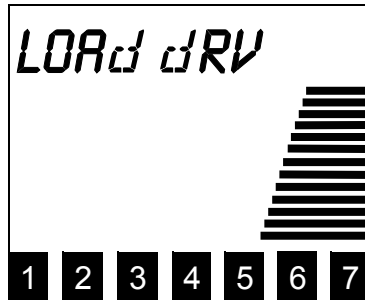
## Mode 1A – LOAD DRV

**Mode 1A** causes your FastStor to load a tape into the drive.

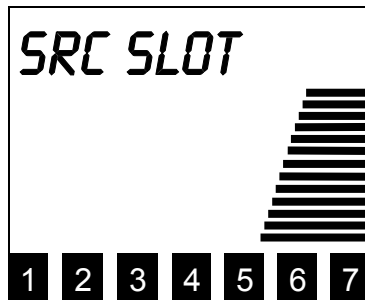
**Note**

If a tape is already loaded in the drive, Mode 1A is not selectable on the LCD, however, Mode 1B is selectable.

- ❑ To access **Mode 1A**, press the **MODE** button until the LCD appears as shown:



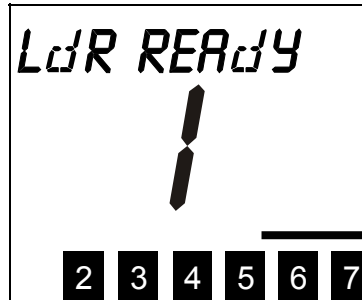
- ❑ Press the **SELECT** button to choose this mode. The LCD appears as shown:



**Note**

If the source slot is empty, a blinking RESELECT will appear on the LCD. The blinking RESELECT indicates that you attempted to select an invalid source slot.

- ❑ Use the **NEXT** or **PREVIOUS** button to scroll through the slot choices. Press **SELECT** when the slot you wish to load is displayed.



Your FastStor will load the desired tape into the drive. After completing the task, the FastStor will return to LdR REAdY, and the slot number of the tape in the drive will be displayed in the center of the LCD.

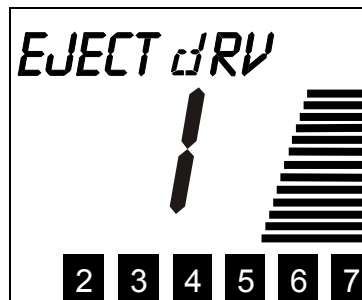
## Mode 1B – EJECT DRV

**Mode 1B** causes the FastStor to eject the tape from the drive and place it into the storage slot that it was loaded from.

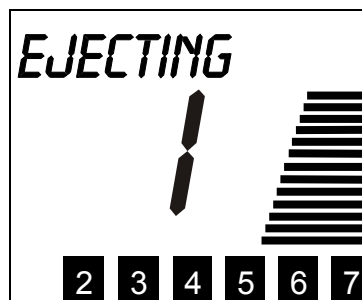
**Note**

If the drive is empty, Mode 1B is not selectable on the LCD.

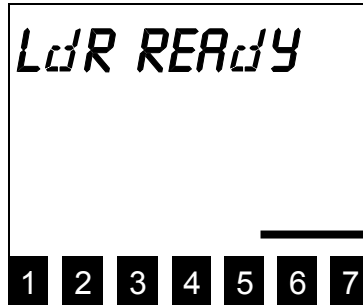
- ❑ To access **Mode 1B**, press the **MODE** button until the LCD appears as shown:



- ❑ Press the **SELECT** button to select **Mode 1B**. The LCD will appear as shown while the drive ejects the tape:



When your FastStor has completed the command, it will return to LdR REAdY.



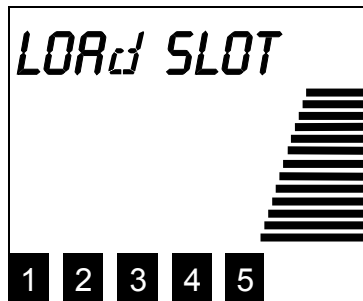
## Mode 2 – LOAD SLOT

**Mode 2** causes the FastStor to load slot 6 from slot 1, or slot 7 from slot 2.

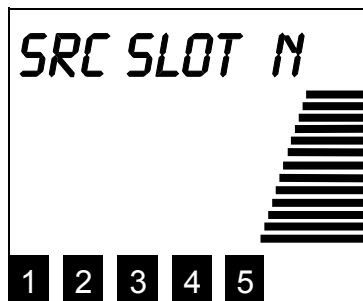
### Note

If slots 6 and 7 already have cartridges, Mode 2 is not selectable on the LCD.

- Place a cartridge in slot 1 if loading slot 6, slot 2 if loading slot 7, or both if loading slots 6 and 7.
- To access **Mode 2**, press the **MODE** button until the LCD appears as shown:



- Press the **SELECT** button to select **Mode 2**. The LCD will appear as shown (N is either slot 6 or 7):



### Note

If slots 6 and 7 already have cartridges, Mode 2 is not selectable on the LCD.

- Press the **SELECT** button to move the cartridge from slot 1 to slot 6, or from slot 2 to slot 7. After moving the cartridge FastStor will return to LdR REAdY.



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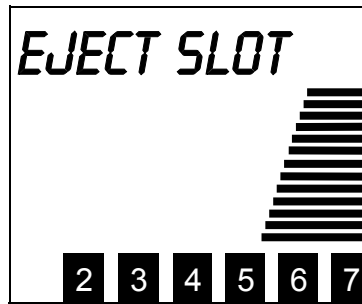
## Mode 3 – EJECT SLOT

**Mode 3** causes the FastStor to move a tape from slot 6 to slot 1, or from slot 7 to slot 2.

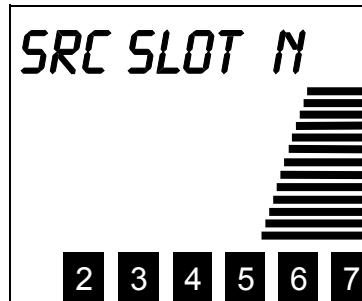
**Note**

If the source slot is empty, or the destination slot is full, selecting EJECT SLOT will cause a blinking RESELECT to appear on the LCD. The blinking RESELECT indicates that you attempted to select an invalid mode.

- To access **Mode 3**, press the **MODE** button until the LCD appears as shown:



- Press the **SELECT** button to select **Mode 3**. The LCD will appear as shown (N is either 6 or 7):



- Press the **NEXT** or **PREVIOUS** button to scroll to choose slot 6 or 7 to eject.
- Press select when the slot you wish to eject is displayed. The FastStor will move the tape from the source slot to the appropriate destination slot.

**Note**

EJECT SLOT always moves the tape in slot 6 to slot 1, and slot 7 to slot 2.

When your FastStor has completed the command, it will return to LdR REAdY.

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## Mode 4 – EJECT PCKR

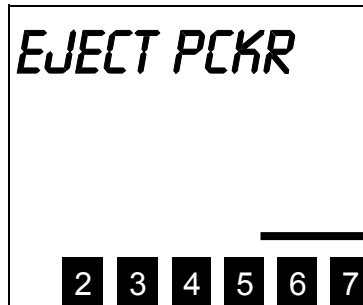
**Mode 4** causes the FastStor to eject a tape left in the Media Picker at power down to any empty destination slot.

### Notes

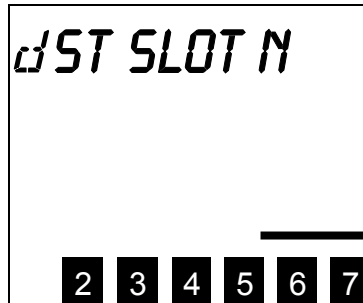
A tape will normally **not** be left in the Picker at power down.

Executing EJECT PCKR Mode when the Media Picker does not have a tape will result in PCKR EMPTY and a large E (indicating an error condition) appearing on the LCD for approximately 25 seconds. If this occurs, you may press the Mode button to return the FastStor the LdR READy before the 25 seconds elapses.

- To access **Mode 4**, press the **MODE** button until the LCD appears as shown:



- Press the **SELECT** button to select **Mode 4**. The LCD will appear as shown while the drive ejects the tape (N is the slot the FastStor will attempt to move the tape to.):



- Use the **NEXT** or **PREVIOUS** button to scroll through the destination slot choices. Press **SELECT** when the slot you wish to place the tape in is displayed. When your FastStor has completed the command, it will return to LdR READy.

### Note

If the destination slot is full, a blinking RESELECT will appear on the LCD. The blinking RESELECT indicates that you attempted to select an invalid destination slot.

## Mode 5 – DENSITY

**Mode 5** is used to set the density format of the data cartridge tape. All previously unformatted DLTtape III, DLTtape IIIXT, and DLTtape IV data cartridges can be formatted to the densities shown in the following table.

Drive Model	Data Cartridge	Cartridge Density (native mode)	Cartridge Density (compressed mode)
DLT 4000	DLTtape III	2.6, 6.0, 10.0 GB	20.0 GB
	DLTtape IIIXT	15.0 GB	30.0 GB
	DLTtape IV	20.0 GB	40.0 GB
DLT 7000	DLTtape III	2.6, 6.0, 10.0 GB	20.0 GB
	DLTtape IIIXT	15.0 GB	30.0 GB
	DLTtape IV	20.0, 35.0 GB	40.0, 70.0 GB
DLT 8000	DLTtape III	2.6, 6.0, 10.0 GB	20.0 GB
	DLTtape IIIXT	15.0 GB	30.0 GB
	DLTtape IV	20.0, 35.0, 40.0 GB	40.0, 70.0, 80.0 GB

### Maximum Capacity

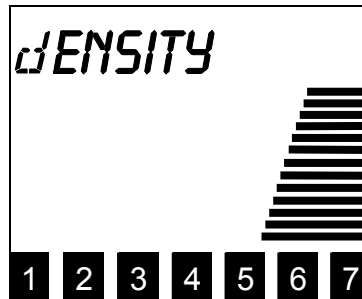
#### Notes

The density menu can only be used with a tape loaded in the drive.

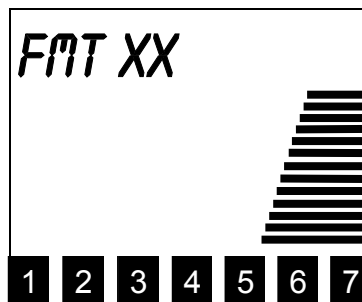
The density of previously recorded DLT data cartridges cannot be changed unless the tape is reformatted which will result in all data being lost.

The default density of unformatted data cartridges is dependent upon the drive installed in your FastStor, and the type of tape being used.

- To access **Mode 5**, press the **MODE** button until the LCD appears as shown:



- Press the **SELECT** button to select **Mode 5**. The LCD will appear as shown (XX is the lowest native density selectable for this cartridge):



- Press the **NEXT** or **PREVIOUS** button to scroll through the density choices. Press **SELECT** when the desired density setting is displayed. When your FastStor has completed the command, it will return to the LdR REAdY.

### Notes

Attempting to select **Mode 5** when the drive is empty will result in a **NO TAPE** error message appearing on the LCD. Press **MODE** to return the FastStor to **Ldr READY**.

If a **NOT LOAdEd** error message appears on the LCD when pressing **SELECT**, the current tape has not completed loading. Press **MODE** to clear the error and return the FastStor to **Ldr READY**.

If a **CANNOT FMT** error message appears on the LCD when pressing **SELECT**, the drive cannot reformat the cartridge (i.e., TK85 cartridge in a DLT4000 drive). Press **MODE** to clear the error and return the FastStor to **Ldr READY**.

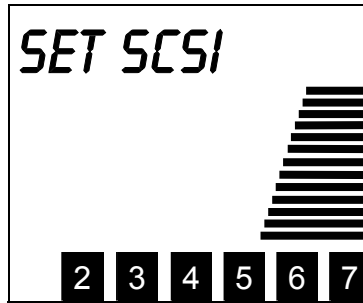
## Mode 6 – SET SCSI ID

### Note

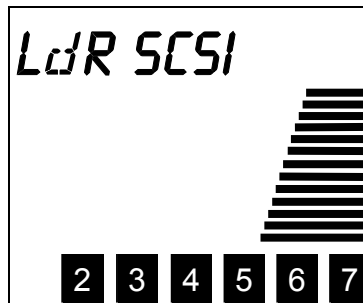
SCSI ID changes are not effective until power is cycled on the FastStor.

Use **Mode 6** to set the SCSI ID of the FastStor robotics and/or the drive.

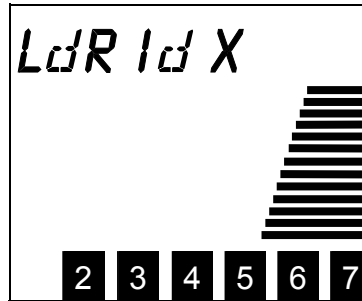
- To access **Mode 6**, press the **MODE** button repeatedly until the LCD appears as shown:



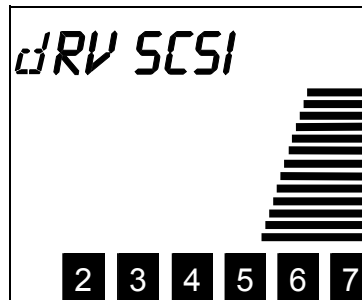
- Press the **SELECT** button to select **Mode 6**. The LCD will appear as shown:



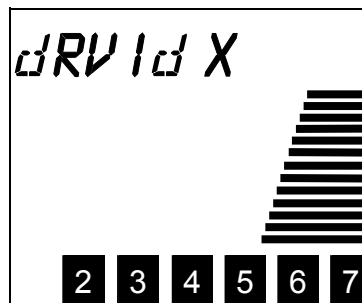
- ❑ Press **SELECT** to choose the FastStor robotics. The LCD will appear as shown (X is the current ID of the robotics.):



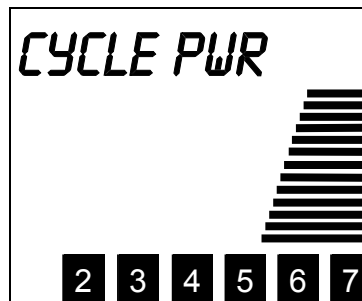
- ❑ Press **NEXT** or **PREVIOUS** button to scroll through the ID choices. Press **SELECT** when the desired ID is displayed. The LCD will appear as shown:



- ❑ Press **SELECT** to choose the drive. The LCD will appear as shown (X is the current SCSI ID of the drive.):



- ❑ Press the **NEXT** or **PREVIOUS** button to scroll through the ID choices. Press **SELECT** when the desired ID is displayed. The LCD will appear as shown below. The **CYCLE PWR** message will blink for approximately 10 seconds and then the FastStor will return to LdR REAdY.



- ❑ Press and hold the **POWER** button for approximately 2 seconds to power down the FastStor, then wait two or three seconds and press the **POWER** button again. The new SCSI ID will now be in effect.

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## Normal Maintenance

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### Cleaning the Drive Head

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Keeping a drive clean is the single most important requirement for achieving and maintaining superior performance. Cleaning the head should always be performed as the first step if the **CT** field appears on the LCD. The tape head may be cleaned once a month, or when the **CT** field appears on the Operator's Panel LCD.

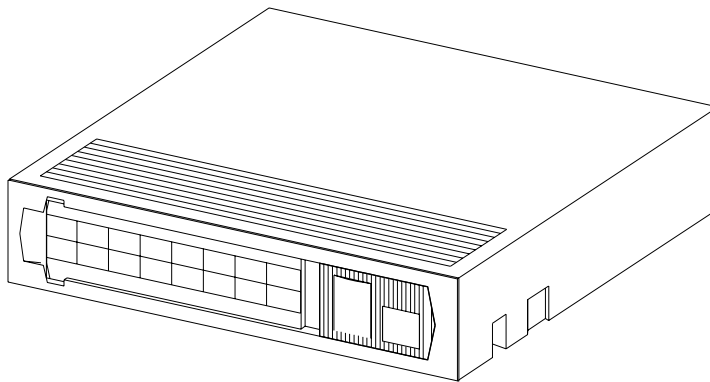
Some application packages feature an auto clean cycle. If your application supports an auto clean function, ADIC strongly recommends that you use it.

**Note**

ADIC recommends that you use the built-in AUTOCLEAN feature if your application does not support an auto clean cycle. However, the tape capacity of the FastStor is reduced to 6 tapes whenever AUTOCLEAN is enabled.

### Cleaning Tape

Use a DLT cleaning tape to clean the drive heads. A cleaning cartridge, or a coupon for a free cleaning tape is shipped with your ADIC FastStor.



*DLT Cleaning Tape*

Cleaning the head should always be performed as the first step if the **CT** field appears on the LCD.

**Note**

The cleaning cartridge is exhausted after it has performed 20 cleanings. The cleaning tape includes a label with 20 small boxes printed on it. Always place a check mark in a box each time the tape performs a cleaning. Replace the cleaning cartridge when it has performed 20 cleanings (all boxes will be checked).

The following table tells you when to use the cleaning tape:

If . . .	It means . . .	You should . . .
1. The <b>CT</b> field appears on the Operator's Panel LCD	The drive head needs cleaning or the tape is bad	Use the cleaning tape to clean the drive head. When cleaning is complete, log the cleaning onto the label.
2. A data cartridge causes the <b>CT</b> field to appear on the Operator's Panel LCD	The data cartridge may be damaged	Back up the data from this cartridge onto another cartridge, it may be damaged. A damaged cartridge may cause unnecessary use of the cleaning cartridge.
3. The <b>CT</b> field re-appears after performing a cleaning and reloading the data cartridge.	Cleaning was not accomplished because the cleaning tape has exhausted all cleaning cycles.  <b>OR</b> The data cartridge may be damaged	Replace the cleaning cartridge.  Back up the data from this cartridge onto another cartridge, it may be damaged. A damaged cartridge may cause unnecessary use of the cleaning cartridge.

## Drive Head Cleaning Procedure

The following procedure is to be used only if your application does not support an auto clean cycle and you choose not to use the AUTOCLEAN feature (refer to Chapter 4 for a detailed description of the AUTOCLEAN feature), or the CLEAN dRV function under the DIAGNOSTICS MENU (refer to Chapter 4 for a detailed description of the CLEAN dRV function).

### Manually Cleaning the Drive Head

#### Notes

To initiate the cleaning cycle manually you must be aware of the present state of the FastStor and the drive that you wish to clean. The drive and storage slot 2 must be empty.

If a cartridge is present in the drive, you must first use the Mode 1B - EJECT dRV operation to remove the cartridge. If necessary, manually remove the data cartridge from slot 2. You can then proceed with these instructions.

#### Caution

Cleaning cartridges are considerably more abrasive to the drive's recording head than standard data cartridges. Usage should be kept within the recommended limits.

- Open the front door of the FastStor.
- Insert the cleaning cartridge into an empty storage slot.
- Use Mode 1A – LOAD dRV to load the cleaning tape into the drive.

The cleaning cycle will be performed. When cleaning is completed, perform the following instructions:

- Use Mode 1B – EJECT dRV to unload the cleaning tape from the drive and place it back in the storage slot.
- Remove the cleaning cartridge and check a usage box on the label.
- To resume normal operation, close the door and lock it.

---

## Cleaning the Enclosure

The outside of the enclosure can be cleaned with a damp towel. If you use a liquid all-purpose cleaner, apply it to the towel. Do not directly spray the enclosure.



# Chapter 4

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## Troubleshooting and Diagnostics

This Chapter ...

- contains some general suggestions to aid you in solving problems – should you ever run into them.
- includes information on error codes and the built-in diagnostics.

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## Installation Problems

Usually, problems encountered during the installation of your FastStor are caused by improper SCSI bus configuration, application software configuration errors or by an OS that has not been correctly configured. If the application software that you are attempting to use is not communicating with your library after installation, check the following:

- ✓ **SCSI IDs:** Make sure that the IDs you selected for the FastStor robotics and tape drive are not the same as the ID used by any other SCSI device on that bus, including the host SCSI adapter card.
- ✓ **SCSI Cabling:** Verify that all SCSI cables are securely connected at both ends and that the bail locks are secured. Also, check the length and integrity of your SCSI cabling. The total length of all cables connected to a SCSI bus must not exceed 3 meters (9.8 feet) for SE configurations, 12 meters (39.4 feet) for LVD/SE configurations, and 25 meters (82 feet) for HVD configurations. Try replacing suspected cables with known good cables.

**Note**

The length of the FastStor internal SCSI cables is 1 foot. This length must be included in any calculations of cable length.

- ✓ **Termination:** Check that all SCSI buses are properly terminated.
- ✓ **Compatibility:** Ensure that your FastStor and its tape drive are compatible with the SCSI adapter card and application software you plan to use.

**Note**

For a list of compatible SCSI adapters and application software, check with your application software vendor.

- ✓ **SCSI Adapter Card Installation:** Verify that you have installed your SCSI adapter card correctly. Refer to the documentation that came with your card for installation and troubleshooting instructions. Pay particular attention to any steps describing the settings of various jumpers and/or switches on the card. Check that the card is seated fully in your computers I/O connector.
- ✓ **Application Software Installation:** Refer to the documentation included with your software for instructions on how to verify installation.

---

## Loader and Drive Operational Problems

Many problems with the operation of your FastStor and/or DLT drive occur when the drive is not cleaned on request or when you use incorrect data cartridges. If you have been successfully operating the application software and the FastStor in the past, but are now experiencing problems reading and writing data, check the following:

- ✓ If you are writing data, make sure that the cartridge is write enabled (move the write-protect switch to the enabled position).
- ✓ If the cartridge has been in use for a long time or if it has been used frequently, try using a new cartridge.
- ✓ Check the data cartridge you are using to confirm compatibility with your drive model.

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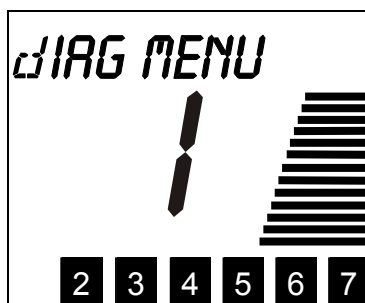
## DIAGNOSTIC MENU

In this chapter we discuss each of the diagnostic functions available through the Operator's Panel keypad.

**Note**

The FastStor will automatically exit the **DIAG MENU** and return to **LDR READY** if the keypad is idle for 30 seconds.

The **DIAGNOSTIC MENU** is accessed by pressing and holding first the **NEXT** button and then the **MODE** button concurrently for approximately 5 seconds. The LCD will appear as shown:

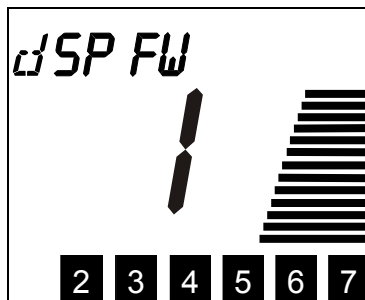


The following functions are available under the **DIAG MENU**:

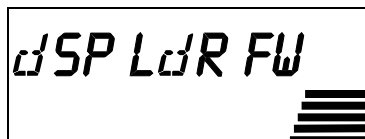
<b>dSP FW</b>	When executed, this function displays the revision of the operating firmware used by FastStor microprocessors and the drive.
<b>SIGN ON</b>	Use this function if your application software does not support FastStor, but does support the SCALAR library.
<b>CHG MODE</b>	Use this function to change the Mode of Operation from/to <b>RANDOM</b> or <b>SEQUENTIAL</b> .
<b>CYCLE TEST</b>	This function allows you to verify the functionality of the FastStor robotics. <b>CYCLE TEST</b> exercises the FastStor robotics by executing a sequence of pick and place operations, moving the cartridges between the slots and the drive.
<b>CLEAN DRV</b>	The <b>CLEAN DRV</b> function permits you to clean the drive head manually. Use this function if your application software does not support an auto cleaning cycle, and you do not want to dedicate slot 7 to the FastStor <b>AUTOCLEAN</b> feature.
<b>AUTOCLEAN</b>	<b>AUTOCLEAN</b> provides an automatic cleaning cycle. Use <b>AUTOCLEAN</b> only if your application software does not support an auto cleaning cycle. Slot 7 is dedicated to the cleaning cartridge whenever <b>AUTOCLEAN</b> is enabled, reducing the FastStor data capacity to 6 tapes.
<b>LOAD FW</b>	When executed, this function allows you to upgrade the FastStor formware via the SCSI bus.
<b>dSP COUNTS</b>	FastStor keeps track of how many times certain events have occurred. The <b>dSP COUNTS</b> function returns these numbers to the display.
<b>UPG DRV FW</b>	This function allows you to upgrade the drive firmware using a FUP tape.

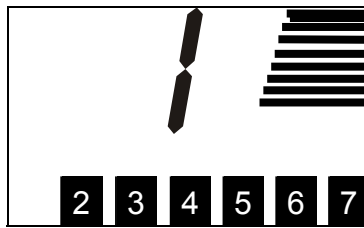
## DISPLAY FIRMWARE

- After entering the **DIAG MENU**, press the **MODE** button to access the **dSP FW** function. The LCD will appear as shown:

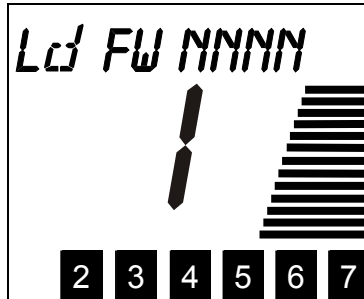


- Press the **SELECT** button to access the **dSP LdR FW** sub-function. The LCD will appear as shown:





- Press the **SELECT** button to display the firmware revision for the FastStor. The LCD will appear as shown (NNNN is the revision number of the firmware.):



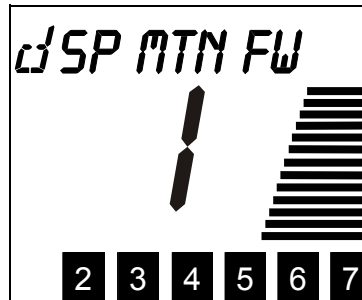
- Press **NEXT** to access the dSP dRV FW sub-function. The LCD will appear as shown:



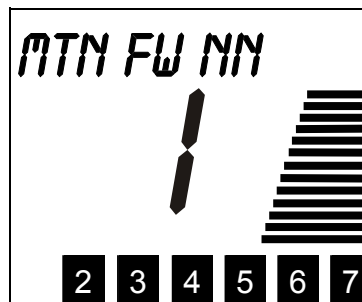
- Press the **SELECT** button to display the firmware revision for the drive. The LCD will appear as shown (NNNN is the revision number of the firmware.):



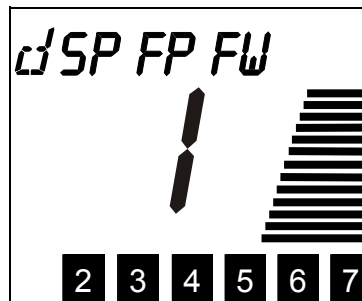
- Press **NEXT** to access the dSP MTN FW sub-function. The LCD will appear as shown:



- Press the **SELECT** button to display the firmware revision for the Motion firmware. The LCD will appear as shown (NN is the revision number of the firmware.):



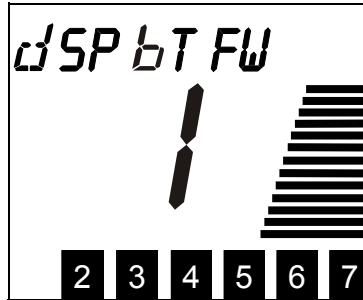
- Press **NEXT** to access the dSP FP FW sub-function. The LCD will appear as shown:



- Press the **SELECT** button to display the firmware revision for the front panel firmware. The LCD will appear as shown (NNNN is the revision number of the firmware.):



- ❑ Press **NEXT** to access the **dSP bT FW** sub-function. The LCD will appear as shown:



- ❑ Press **SELECT** to display the firmware revision for the boot firmware. The LCD will appear as shown (NNNN is the revision number of the firmware.):

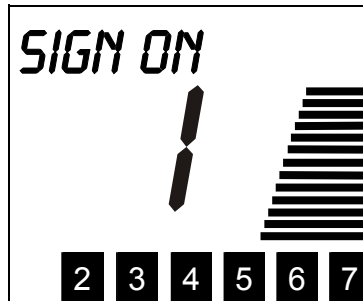


- ❑ Press **SELECT** to return the FastStor to LdR READy.

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## SIGN ON

- ❑ After entering the DIAG MENU, press the **MODE** button until SIGN ON appears on the LCD:



- ❑ Press the **SELECT** button to display the current sign on string.
- ❑ Press the **NEXT** or **PREVIOUS** button to toggle the sign on string between FASTSTOR and SCALAR.
- ❑ Press the **SELECT** button to return the FastStor to LdR READy.

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## CHANGE MODE

Your FastStor is capable of operating in either Random-Access or Sequential-Access modes.

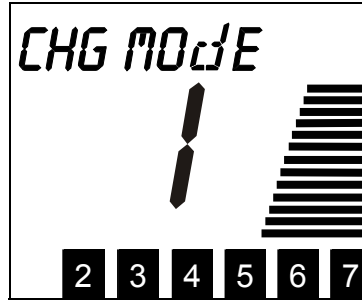
When in Random-Access mode, the FastStor allows software selection of *any* data cartridge in *any* order. You can logically divide cartridge usage to satisfy particular data storage needs. For example, you can assign one or more cartridges to specific data functions (such as certain directories or network servers), or you can assign specific cartridges to individual users or groups (such as Sales or Engineering).

When in Sequential-Access mode, all cartridges present are considered to be a single volume. The FastStor operating firmware predefines the selection of the cartridges. After initialization, the firmware will always load the first cartridge found (counting from 1 through 7) into the drive. After the application software has filled this cartridge the FastStor will automatically unload the drive, return the cartridge to its storage slot, and then load the next cartridge in order. Empty storage slots are ignored. FastStor will

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continue this process until the volume is full. It is important to note that while in Sequential-Access mode, the FastStor robotics is not logically connected to the SCSI bus and does not respond to SCSI commands.

- ❑ After entering the DIAG MENU, press the **MODE** button until CHG MOdE appears on the LCD:



- ❑ Press the **SELECT** button to display the current mode.
- ❑ Press the **NEXT** or **PREVIOUS** button to toggle the mode between SEQUENTIAL and RANDOM.
- ❑ Press the **SELECT** button. **CYCLE PWR** will blink and appear on the LCD for approximately 10 seconds.
- ❑ Press and hold the **POWER** button for two seconds to power down the FastStor.
- ❑ Wait a few seconds, then press the **POWER** button again to power up the FastStor.

When in Sequential-Access mode, the FastStor replaces the **LdR REAdY** message with a **SEQ REAdY** message.

If you press **MODE** when the FastStor is in Sequential-Access mode, a **STOP SEQ** menu will appear on the LCD. Pressing **SELECT** while in this menu will cause a **SEQ ENDING** message to replace the **LdR REAdY** message and Sequential mode will finish after the currently loaded cartridge is unloaded. Pressing **MODE** after the cartridge is unloaded will cause FastStor to enter the normal menu structure.

When the **SEQ ENDING** message is displayed, pressing **MODE** before the current cartridge is unloaded will cause a **RESUME SEQ** menu to be displayed. Pressing **SELECT** while in this menu will cause the previous **STOP SEQ** request to be canceled and Sequential mode will continue with the current cartridge as if **STOP SEQ** had never been requested.

When the last cartridge in the volume has been filled, a **SEQ dONE** message will replace the **SEQ REAdY** message.

When the **SEQ dONE** message is displayed, pressing **MODE** will cause a **START SEQ** menu to be displayed. Pressing **SELECT** while in this menu will cause Sequential mode to restart. Pressing **MODE** while in this menu will cause FastStor to enter the normal menu structure.

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## CYCLE TEST

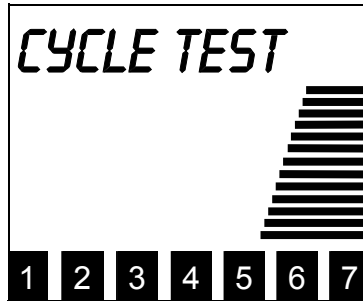
### Notes

Before executing **CYCLE TEST**, verify that the drive is empty. If necessary, use Mode 1B – EJECT DRIVE, to remove any cartridge from the drive.

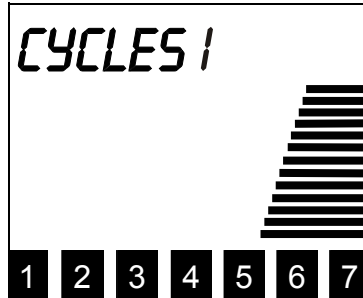
Before executing **CYCLE TEST**, verify that all seven cartridge slots have tapes installed. If required, install additional cartridges.

If **AUTOCLEAN** is enabled and a cleaning tape is in slot 7, **CYCLE TEST** will not use slot 7 during the test.

- ❑ After entering the DIAG MENU, press the **MODE** button until CYCLE TEST appears on the LCD:



- ❑ Press **SELECT** to initiate the CYCLE TEST function. The following will appear on the LCD:



- ❑ Press the **NEXT** button to cycle through the number of desired cycles.
- ❑ Press **SELECT** when the desired number of cycle tests is displayed.

#### Notes

If you want the FastStor to execute CYCLE TEST continually, press PREVIOUS until CYCLES 0 is displayed.  
Press SELECT to execute continuous CYCLE TEST.  
To terminate continuous CYCLE TEST, press and hold MODE for approximately 10 seconds.

During CYCLE TEST execution, FastStor moves the cartridges from one slot to another, and places each cartridge into the drive

- ❑ When CYCLE TEST is completed, your FastStor will return to LdR READy.

## CLEAN DRIVE

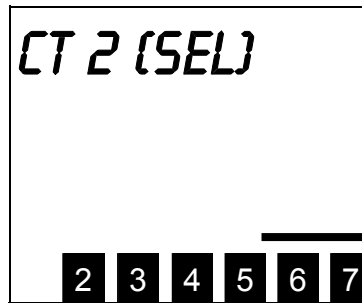
The following procedure is to be used only if your application does not support an auto clean cycle and you choose not to use the FastStor **AUTOCLEAN** feature.

- ❑ After entering the DIAG MENU, press the **MODE** button until CLEAN dRIVE appears on the LCD:





- ❑ Press the **SELECT** button to begin the drive head cleaning process. The LCD will display the following blinking message:



- ❑ If necessary, place a cleaning tape in slot 2 then press **SELECT**. FastStor will move the cleaning tape to the drive and cleaning will begin. During cleaning the following message will be displayed on the LCD, and the Activity Bars will indicate the drive activity.



#### Notes

If you press **SELECT** before placing the cleaning cartridge in slot 2, FastStor will continue to display the above message.

If a data cartridge is in slot 2 and you press **SELECT**, FastStor will treat it like a cleaning cartridge and move it to the drive.

If a cartridge is in the drive when you press **SELECT**, a **DRIVE FULL** error will be posted. Clear the error by pressing the **MODE** button. Use the **EJECT DRV** mode to remove the cartridge from the drive, then start the cleaning process again.

When the cleaning process is complete, the drive will automatically eject the cartridge, and FastStor will place it back in slot 2. The following blinking message will then be displayed on the LCD:



- ❑ Remove the cleaning cartridge from slot 2, then press the **SELECT** button to return FastStor to LdR READY.

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## AUTOCLEAN

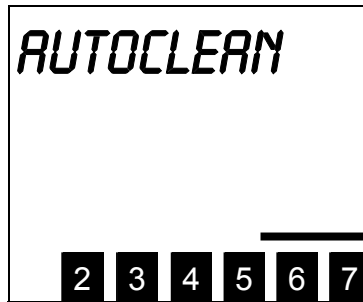
The AUTOCLEAN function is for use with application software that does not support automated cleaning of the drive head. Applications that support automated cleaning manage tape location and use, including that of the cleaning cartridge. Do not use the AUTOCLEAN function if your application software supports automated cleaning cycles.

### Enabling AUTOCLEAN

**Note**

The default condition is AUTOCLEAN Off.

- After entering the DIAG MENU, press the **MODE** button until AUTOCLEAN appears on the LCD:



- Press the **SELECT** button to access the AUTOCLEAN function. The following message will be displayed on the LCD:



- Press the **SELECT** button to enable the AUTOCLEAN function. The following blinking message will be displayed on the LCD:



- Place the cleaning cartridge in slot 2, then press **SELECT**. FastStor will move the cartridge from slot 2 to slot 7.

### Notes

If, when you press **SELECT**, slot 7 is full, FastStor will return a **dEST FULL** error message and **AUTOCLEAN** will not be enabled. In this instance, use the **UNLOAD SLOT** mode to empty slot 7 first, then enable **AUTOCLEAN**.

If you wish to abort while enabling the **AUTOCLEAN** function, before placing the cleaning cartridge in slot 2 and pressing **SELECT**, press the **MODE** button. FastStor will return to **LdR REAdY** and **AUTOCLEAN** will not be enabled.

If you do not place the cleaning cartridge in slot 2 and press **SELECT** within 30 seconds, the function will timeout, FastStor will return to the **LdR REAdY**, and **AUTOCLEAN** will not be enabled.

The Autoclean function is disabled until FastStor places the cleaning cartridge in slot 7. If power is cycled prior to FastStor placing the cartridge, **AUTOCLEAN** will remain disabled.

If a data cartridge is in slot 2 and you press **SELECT**, FastStor will treat it like a cleaning cartridge and move it to slot 7.

If a cartridge is in the drive when you place the cleaning cartridge in slot 2 and press **SELECT**, a **dRIVE FULL** error will be posted and **AUTOCLEAN** will remain disabled. This is also true if the Picker is full when you press **SELECT**. In either case, clear the error by pressing the **MODE** button. The use the **EJECT dRV** mode to remove the cartridge from the drive, or the **EJECT PCKR** mode to remove the cartridge from the Media Picker, before again attempting to enable **AUTOCLEAN**.

## Using AUTOCLEAN

**AUTOCLEAN** will automatically perform a cleaning whenever the drive issues a Cleaning Requested status. After completion of the head cleaning, FastStor will return the cleaning cartridge to slot 7.

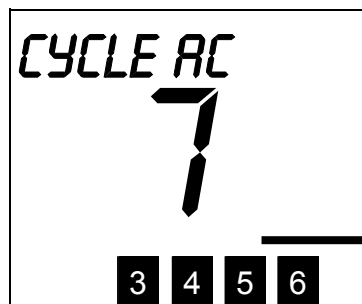
### Notes

When **AUTOCLEAN** is enabled, the application does not have access to slot 7, and FastStor appears as a 6 slot loader. This forces the application to remap the FastStor. Although slot 7 is unavailable to the application, the slot 7 indicator on the Operator Panel LCD functions normally (shows the presence of a cartridge when cleaning is not being performed).

When **AUTOCLEAN** is enabled you still have normal access to slot 7 from the front panel, allowing you to recover from the error if the cleaning cartridge gets stuck in the Media Picker.

If the cleaning cartridge is ever in any slot other than 7, **AUTOCLEAN** will not function.

If, during the cleaning, the drive issues a cleaning tape expired condition, FastStor will display the following blinking message on the LCD:

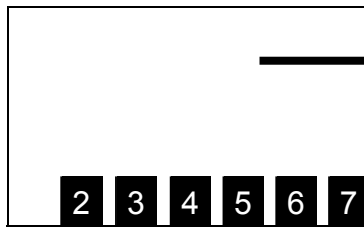


- ❑ To clear the error condition, press the **MODE** button. Now use the front panel to replace the cleaning cartridge with a new one. This will allow Autoclean to remain on. If desired, follow the instructions in the following section to first disable **AUTOCLEAN**, then re-enable it using a new cleaning cartridge.

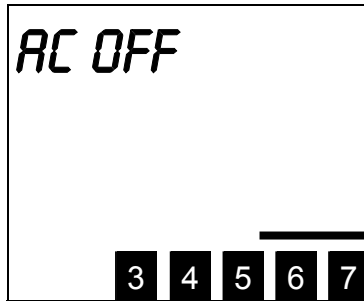
## Disabling AUTOCLEAN

- ❑ After entering the **DIAG MENU**, press the **MODE** button until **AUTOCLEAN** appears on the LCD:





- Press the **SELECT** button to access the AUTOCLEAN function. The following message will be displayed on the LCD:



- Press the **SELECT** button to disable the AUTOCLEAN function. FastStor will move the cleaning cartridge from slot 7 to slot 2. The following blinking message will be displayed on the LCD:



- Remove the cleaning cartridge from slot 2, then press **SELECT**. FastStor will return to LdR REAdY.

#### Notes

If a cartridge is present in slot 2, FastStor will post a dEST FULL error and AUTOCLEAN will remain on.

The AUTOCLEAN function remains enabled until FastStor places the cleaning cartridge in slot 2. If power is cycled after the Media Picker picks the cartridge, but prior to FastStor placing the cartridge in slot 2, AUTOCLEAN will remain enabled. In this instance, when power is returned, use the EJECT PCKR Mode to place the cleaning cartridge in slot 7, then attempt to disable AUTOCLEAN again.

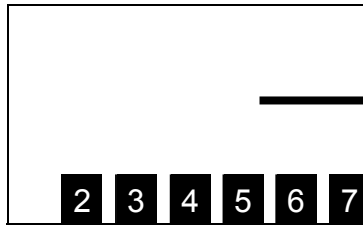
## LOAD FIRMWARE

Whenever new firmware for the FastStor is released, complete instructions on how to use the **LOAD FIRMWARE** function to perform the upgrade is included on the firmware diskette.

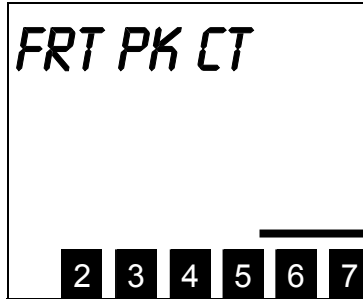
## DISPLAY COUNTS

- After entering the DIAG MENU, press the **MODE** button until dSP COUNTS appears on the LCD:

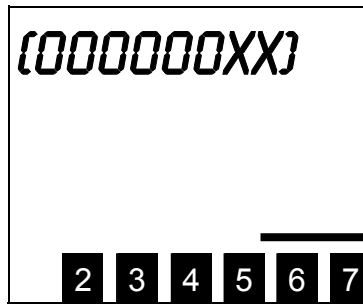




- Press the **SELECT** button to access the first event. The display will appear as shown:



- Press **SELECT** again to return the number of times that FastStor has picked a cartridge from any of the front slots. The display will appear similar to the following:



- Press **NEXT** to access the next event.

The events that FastStor keeps track of are listed below:

Front Pick Cartridge	Front Pick Retries
Rear Pick Cartridge	Rear Pick Retries
Drive Pick Cartridge	Drive Pick Retries
Front Place Cartridge	Front Place Retries
Rear Place Cartridge	Rear Place Retries
Drive Place Cartridge	Drive Place Retries
Drive Door Retries	

- Pressing **SELECT** when the return value for dRV dR RE is displayed will return FastStor to LdR REAdY. Also, pressing the **MODE** button at any time will return FastStor to LdR REAdY.

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## UPGRADE DRIVE FIRMWARE

The following procedure is to be used only when you are upgrading the drive firmware using a Firmware Upgrade (FUP) tape.

- After entering the DIAG MENU, press the **MODE** button until the following appears on the LCD:



- Press **SELECT** to begin the drive firmware upgrade process. The following message will be blinking on the LCD:



- 
- ❑ If not already installed, place a FUP tape in slot 2 then press **SELECT**. If you press **SELECT** before placing the FUP tape in slot 2, **UPG dRV FW** will appear momentarily on the LCD and then the blinking **CT 2 (SEL)** message will reappear.

The drive will be placed in a “prepare for firmware upgrade via tape” mode. The FastStor will move the FUP tape to the drive and the upgrade process will begin. **UPdATING** will appear on the LCD, the three front panel LEDs will alternate between **POWER** on, **ACTIVITY** off, **ALARM** on, **POWER** off, **ACTIVITY** on, **ALARM** off, and the Activity Bars will indicate the drive activity; also, the **POWER** button will be disabled during the upgrade.

When the update process is completed, the FastStor will auto-unload the tape and return it to slot 2. The following message will be blinking on the LCD:



- ❑ Remove the FUP tape from slot 2, then press **SELECT** to return the FastStor to **LdR REAdY**.

If the **dRIVE PGRM** message and the error indicator **E** appear on the LCD after several minutes, perform the following:

- ❑ Verify that the tape is a valid FUP tape and not a data or cleaning cartridge.
- ❑ If you believe that the tape is OK, repeat the update process. If the FastStor displays the same error message, call ATAC for assistance.

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## FastStor Error Messages

If, during operation of your FastStor an error occurs, the FastStor will halt the current operation and an error message will be displayed on the LCD. In all cases, after removing the cause of the problem, cycle power on your FastStor and try the last operation again.

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### Error Message Listing

A description of each of the FastStor error messages is provided in the following table:

Error Name	Description	Error Name	Description
SERIAL RCV	Interprocessor communication error	PCKR EMPTY *	The media picker was empty
SRC EMPTY *	The source location is empty	SLOT FULL *	There was medium in slot
dEST FULL *	The destination location is full	NVM SELECT	NVRAM selection failure
CPU RX ERR	The motion CPU is not ready to receive	NVM WRITE	NVRAM write failure
CPU TX ERR	The motion CPU is not ready to transmit	dRIVE EJCT	Drive failed to eject medium
SLOT EMPTY	No slot beam was detected	dRIVE LOAd	Unable to load medium into drive
PWR SWITCH	The front power switch was pressed	dRIVE UNLd *	Drive not logically unloaded
HALT	The motion CPU has been halted by a low ACT line	dRIVE HNdL	Drive 'Operate Handle' timeout
CAM LIMIT	A cam limit has been reached w/o tripping a sensor	dRIVE BUSY	Drive busy, cannot unload tape
JAW SENSOR	A jaw sensor was tripped	dRIVE PGRM	Attempt to set drive parameters failed
INV MOV OP *	An invalid move operation occurred	dRIVE dOOR	Drive door stepper motor limit
REAR TAPE	A rear tape sensor was not tripped	dRIVE FULL *	The drive was full
FRONT TAPE	A front tape sensor was not tripped	CT FAILED	Cleaning tape failed to clean drive
REAR SLOT	A rear slot sensor was not tripped	dRIVE POST	Drive failed its POST
FRONT SLOT	A front slot sensor was not tripped	ROBOT POST	Robotics failed its POST
PCKR FULL *	The media picker was full		

\* These errors will not appear on the LCD if the error occurred during SCSI interaction.

**Note**

During the FastStor POST, if the CT FAILED, dRIVE BUSY, dRIVE dOOR, dRIVE EJCT, dRIVE HNdL, dRIVE LOAd, dRIVE PGRM, or dRIVE UNLd error occurs, dRIVE POST will appear on the Operators Panel LCD. All other errors occurring during FastStor POST will result in ROBOT POST being displayed.



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## Environmental Considerations

For best performance of your FastStor, and to minimize the chance of condensation, please observe the following guidelines:

- Install your FastStor on a level surface. Do not place FastStor on a carpeted surface.
- If you expose cartridges to temperatures outside the operating limits, 10-40°C (50-104°F), stabilize them by leaving the cartridges in the operating temperature for a minimum of two hours before you use them.
- Avoid temperature problems by ensuring that the FastStor rear panel is not obstructed so that the drive has adequate ventilation.
- Position the FastStor where the temperature is relatively stable (i.e., away from open windows, fan heaters, and doors).
- Avoid leaving cartridges in severe temperature conditions, for example, in a car standing in bright sunlight.
- Avoid transferring data (reading from and writing to cartridges) when the temperature is changing by more than 10°C (15°F) per hour.

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## When You Call ADIC'S Technical Assistance Center

Before calling ATAC, follow these steps – which will help you take full advantage of your call:

- Review all documentation carefully. (Experience has demonstrated that most questions are answered in your documentation.)
- 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 ADIC's system installed and turned on.
- If running on a network, have all relevant information available (i.e. type, version #, network hardware, etc.).
- Be prepared to provide:
  - Your name and your Company's name
  - Model number
  - Serial number of FastStor (located inside the unit, under the bottom cartridge slot)
  - Serial number of drive assembly (located on rear panel, above SCSI connectors)
  - Software version numbers
    - device driver
    - archive/restore
  - Hardware configuration, including firmware version, 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 the ADIC system

Having this information available when you call for customer assistance will enable ADIC to resolve your problem in the most efficient manner possible.

**Note**

In the US and Canada, call ATAC at 1-800-827-3822.

In Europe, call ATAC at +800.9999.3822.

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# Appendix

# A

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## Specifications

This Appendix ...

- contains specification information on the FastStor and the DLT drive.

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**Drive:**

Type:	FastStor DLT 4000 — Quantum® model DLT4000 FastStor DLT 7000 — Quantum® model DLT7000 FastStor DLT 8000 — Quantum® model DLT8000
Data Capacity: (compressed mode)	Up to 40 GB per 1800 ft cartridge (DLT4000) Up to 70 GB per 1800 ft cartridge (DLT7000) Up to 80 GB per 1800 ft cartridge (DLT8000)
Data Transfer Rate: (compressed mode)	3.0 MB/sec. sustained (180 MB/min., DLT4000) 10.0 MB/sec. sustained (600 MB/min., DLT7000) 12.0 MB/sec. Sustained (720 MB/min., DLT8000)

**Loader:**

Media type:	DLT ½-inch, metal-particle cartridges
Capacity:	Up to 560 GB
Cartridge Change:	10 seconds max
Indicators/Controls:	4 button keypad with LCD menu display, Power button, Power LED, Activity LED and Alarm LED to monitor and control system status, diagnostics and configuration
Interface:	FastStor DLT4000 — SE or HVD, Fast SCSI, 68-pin HD FastStor DLT7000 — SE or HVD, Fast/Wide SCSI, 68-pin HD FastStor DLT8000 — LVD/SE or HVD, Fast/Wide SCSI, 68-pin HD

**Reliability:**

Maintenance:	Drive head cleaning with DLT cleaning cartridge when indicated by drive, or automatic with Autoclean enabled.
MSBF:	Greater than 250,000 cartridge changes (net, drive and media) with scheduled maintenance.
MTBF:	More than 80,000 power-on hours
MTTR:	Within 30 minutes

**Physical:**

Dimensions:	9.25" (w) x 23.25" (d) x 7.5" (h)
Weight:	26.5 lb
Shipping Weight:	37 lb

**Power Consumption:**

Less than 85 Watts

**Environment:**

Electrical:	100-120/220-240 Vac, 1.2-0.6 Amps, 50-60 Hz
Temperature:	10° C to 40° C (Operating)
Humidity:	5% to 80% RH, non-condensing (Operating) 90% maximum (Storage/Shipping)
Vibration:	0.3 g (5-500-5 Hz), Operating Tested per ISTA for storage/shipping
Shock:	3 g Operating Impact tested per ISTA for storage/shipping

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