StorCase® Technology

Data Silo®
DS321

External FireWire 800-to-IDE
Expansion Chassis

User's Guide

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Part No. D89-0000-0213 B00 April 2004

Kingston Technology Affiliate
StorCase® TECHNOLOGY
Safest Place for Your Data®

StorCase Technology, Inc.
17600 Newhope Street
Fountain Valley, CA 92708-9885
Phone (714) 438-1850 Fax (714) 438-1847

LIMITED WARRANTY

STORCASE TECHNOLOGY, Incorporated ("StorCase") warrants that its products will be free from defects in material and workmanship, subject to the conditions and limitations set forth below. StorCase will, at its option, either repair or replace any part of its product that proves defective by reason of improper workmanship or materials. Repair parts or replacement products will be provided by StorCase on an exchange basis, and will be either new or reconditioned to be functionally equivalent to new.

This warranty does not cover any product damage that results from accident, abuse, misuse, natural or personal disaster, external power surge or failure, or any unauthorized disassembly, repair or modification. StorCase will not be responsible for any software, firmware or other customer data stored within, or interfacing with a StorCase product.

Duration of Warranty

Seven-Year Warranty: The following StorCase products are covered by this warranty for a period of seven (7) years from the original date of purchase from StorCase or its authorized resellers: all Data Express® removable device enclosures and all Data Silo®, Data Stacker® and InfoStation® external expansion chassis, except for those components integrated into or purchased separately for use with these products which are identified and covered by the three-year or hard drive warranties described below. All StorCase interface cables and other accessories specifically intended for use with the StorCase products identified above are also covered by this (7) year warranty.

Three-Year Warranty: The following components integrated into or purchased separately for use with StorCase Data Express, Data Silo, Data Stacker and/or InfoStation products are subject to warranty for a period of three (3) years from the original date of purchase from StorCase or its authorized resellers: all RAID controllers, power supplies, fans and blowers.

Two-Year Warranty: The following StorCase products are covered by this warranty for a period of two (2) years from the original date of purchase from StorCase or its authorized resellers: all Rhino®*JR* fixed external expansion chassis (model types "FJR") and all Rhino*JR* removable device enclosures (model types "RJR").

One-Year Warranty: All StorCase products identified as Reconditioned or "Special Inventory" are covered by this warranty for a period of one (1) year from the original date of purchase from StorCase or its authorized resellers. Reconditioned products may only be exchanged for reconditioned products.

Hard Disk Drive Warranty: All hard disk drives purchased from StorCase or through its authorized resellers, whether purchased separately or integrated into StorCase products, are subject to the warranty terms and conditions provided by the drive manufacturer.

Warranty Claim Requirements

To obtain warranty service, the defective product must be returned to your local authorized StorCase dealer or distributor, or, with prior StorCase approval, to the StorCase factory service center.

For defective products returned directly to StorCase, a Return Material Authorization ("RMA") number must be obtained by calling StorCase Customer Service at (714) 445-3455. The RMA number must be prominently displayed on the outside of the return package. Shipments must be freight-prepaid and insured, and must include the product serial number, a detailed description of the problem experienced, and proof of the original retail purchase date. Products must be properly packaged to prevent damage in transit. Damage resulting from improper packaging will not be covered by this warranty. The StorCase factory service center is located at 17650 Newhope Street, Receiving Dock, Gate #4, Fountain Valley, CA 92780, U.S.A.

Free Technical Support

StorCase provides free technical support. If you experience any difficulty during the installation or subsequent use of a StorCase product, please contact StorCase's Technical Support Department prior to servicing your system. This warranty covers only repair or replacement of defective StorCase products, as described above. StorCase is not liable for, and does not cover under warranty, any costs associated with servicing and/or installation of StorCase products.

StorCase Technical Support can be reached in the U.S. at (714) 438-1858 or toll-free at (888) 435-5460 (U.S. and Canada only). StorCase European Technical Support can be reached in the U.K. at +44 (0) 1932 738900.

Disclaimers

The foregoing is the complete warranty for the products identified above and supersedes all other warranties and representations, whether oral or written. StorCase expressly disclaims all warranties for the identified products, which are not stated herein, including, to the extent permitted by applicable law, any implied warranty of merchantability or fitness for a particular purpose. In no event will StorCase be liable to the purchaser, or to any user of a StorCase product, for any damages, expenses, lost revenues, lost savings, lost profits, or any other incidental or consequential damages arising from the purchase, use or inability to use a StorCase product, even if StorCase has been advised of the possibility of such damages.

Kingston Technology Affiliate

StorCase TECHNOLOGY

Safest Place for Your Data ®

Declaration of Conformity

Company Name:	StorCase Technology, Inc.
Corporate Office Address:	17600 Newhope Street Fountain Valley, CA 92708
Manufacturing Address:	17600 Newhope Street Fountain Valley, CA 92708
Product Name:	Data Silo DS321
Model Number:	S30F107
Conforms to the following standards:	
EMC Directives: **(89/336/EEC)**	ITE Emission - EN 55022: 1998 - EN 61000-3-2 Harmonic Current - EN 61000-3-3 Voltage Fluctuations and Flicker EN 55024: 1998 ITE Immunity - IEC 61000-4-2 - IEC 61000-4-3 - IEC 61000-4-4 - IEC 61000-4-5 - IEC 61000-4-6 - IEC 61000-4-8 - IEC 61000-4-11
Low Voltage Directive: **(73/23/EEC)**	EN 60950
Safety Standards: **CSA (NRTL/C)**	CAN/CSA-C22.2 No. 950-95 UL 1950, Third Edition
TUV:	EN 60950: 1992 + A1 + A2 + A3 + A4 + A11
EMI Standards:	FCC Part 15, Class A
EMC Standards:	AS/NSZ 3548 Information Technology Equipment
Year of Manufacture:	2004

Signature: _____

Full name: Dieter Paul

Position: President

Important Safety Instructions

1. Read all these instructions.
2. Save these instructions for later use.
3. Follow all warnings and instructions marked on the product.
4. Do not use this product near water.
5. This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
6. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risk. Refer all servicing to service personnel.

Wichtige Sicherheitshinweise

1. Diese Hinweise sollten vollständig durchgelesen werden.
2. Diese Hinweise für einen späteren Gebrauch aufbewahren.
3. Allen auf dem Gerät angebrachten Warnungen und Hinweisen folgen.
4. Das Gerät nicht in der Nähe von Wasser verwenden.
5. Das Gerät nur mit dem Aufkleber bezeichneten Netzspannung betreiben. Bei Fragen über die Art der Netzspannung sollte der Händler oder das Energieversorgungsunternehmen zu rate gezogen werden.
6. Nicht versuchen das Produkt selbst zu reparieren. In allen Produkten existieren gefährliche elektrische Spannugen. Nicht das Gehäuse öffnen.
7. Wartungsarbeiten nur von qualifiziertern Kundendienstpersonal ausführen laßen.

Table of Contents

List of Figures

INTRODUCTION

Packaging Information

The StorCase Technology Data Silo® external expansion chassis is shipped in a container designed to provide protection and prevent damage during shipment. The Data Silo was carefully inspected before and during the packing procedure at the factory. Evidence of any damage to the Data Silo should be reported to the shipper immediately.

If the wrong Data Silo model has been received, please call your reseller or StorCase at (800) 435-0642 to arrange for a Return Material Authorization (RMA). StorCase cannot accept returns which do not display an RMA number on the outside of the package. Return the unit with all the original packing materials.

Before removing any component from its packaging, discharge any static electricity by touching a properly grounded metal object.

Serial Number

The Data Silo is labeled with a serial number. This number must be reported to the StorCase Customer Service Representative in order to receive a Return Material Authorization (RMA) for warranty claims. Locate the serial number label and record the number in the space provided below.

Serial Number:

General Description

WARNING: The DS321 contains NO USER SERVICEABLE PARTS inside the unit. Refer ALL servicing to qualified service personnel!

The StorCase Technology **Data Silo® DS321** 2-bay expansion chassis with FireWire 800 (IEEE-1394b) interface provide durable and reliable mounting for two (2) 3.5" form factor, low-profile (1" high) Ultra ATA100 or 133 drives. It is downward compatible with earlier technology IDE drives.

The DS321 is a 1U desktop (rack-mountable with provided hardware), dual bay configuration (Figure 1) for removable drives (equipped with 2 Data Express® DE110 removable drive enclosures). Each chassis is constructed of rugged steel and is equipped with one (1) 40W auto-switching power supply, drive status LEDs, one (1) cooling fan (5.5 CFM), and all necessary internal wiring and drive mounting hardware.

The DS321 comes standard with two (2) dual port FireWire 800 (IEEE-1394b) interfaces, which allow for single or dual host configurability.

Figure 1: Data Silo DS321

This User's Guide describes the steps required for installing drive(s) into the Data Silo DS321external expansion chassis. This guide is intended to supplement documentation provided with the host computer system, the operating system, and the drive(s) to be installed within the Data Silo.

Features:

- 1U desktop enclosure (rack-mountable with provided hardware)
- Two (2) Data Express® DE110 removable IDE drive carriers
- Supports drive hot swapping
- Supports Ultra ATA100 or 133 drives (downward compatible with earlier-technology AT/IDE drives)
- Two (2) FireWire 800 (IEEE-1394b) interfaces with multiple drive configurability
- Universal Plug and Play
- Supports FireWire 800 high-speed transfer rates (up to 800Mbps)
- Compliant with ATA-5 and IEEE-1394b Standards
- Supports Microsoft® Windows® 98SE/2000/ME and Mac® OS generic SBP-2 drivers
- Corrosion-resistant steel construction
- One (1) fan (5.5 CFM) with override option
- One (1) 40W auto-switching power supply
- Audible alarm
- Includes external 6' and 20" Beta-to-Beta (FireWire 800-to-FireWire 800) cables, and external 6' Bilingual-to-6 circuit 1394a (FireWire 800-to-FireWire 400) cable
- Ideal for video editing
- 7-year warranty and free 24/7 technical support

Front Panel

(Figure 2)

- **Data Express® DE110 Removable Drive Carrier(s)** - Provides durable and reliable mounting for low-profile 3.5" Ultra ATA100 or 133 drives (downward-compatible with earlier technology IDE drives).

- **Key Lock/Drive Power Switch(es)** - Perform three functions. The key switch assures proper seating of the drive carrier within the receiving frame, turns power to the drive on and off, and prevents unauthorized removal or installation of the carrier.

  NOTES: Disable FireWire device on host computer desktop *before* turning OFF power (simply right-click on the “Unplug/Eject Hardware” Icon located in the System Tray and "disconnect").

  For Microsoft® Windows® 2000 applications, DO NOT turn on immediately after turning off power. Wait at least 15 seconds before turning power back on.

- **LEDs** - Provides the following operating information:

Ready = (Green)	ON indicates power to the drive and drive is ready. FLASHING indicates drive not ready.
Activity = (Yellow)	FLASHING indicates drive activity.
Error = (Red)	FLASHING indicates Fan Override is ON. Fan is DISABLED. Steady glow indicates fan fault condition. Audible alarm will also sound.
NOTE:	Fan Override must be OFF for the Error LED to indicate fan fault condition.

Refer to section "*Rear Panel*" for further information regarding the Fan Override.

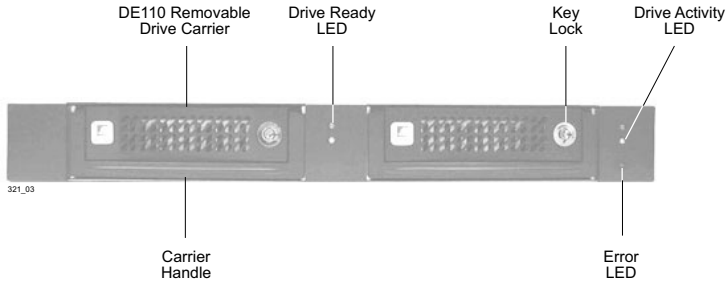

Figure 2: Front Panel

Rear Panel

(Figure 3)

- **FireWire Interfaces** - Connect to a FireWire 800 (IEEE-1394b) device via FireWire800 cable (provided). Dual connectors allow for single or dual host configurability. Refer to section "*Typical FireWire Configurations*" for further information.
- **Fan** - One (1) cooling fan provides chassis ventilation (5.5 CFM).
- **Fan Override Switch** -

  OFF = (*Recommended*) Cooling fan is ON when chassis is on (Factory Default).

  ON = Fan Override is enabled. Cooling fan is DISABLED.

- **A/C Power In** - Accepts U.S. and other available international standard power cords.
- **Power Switch** - Rocker switch controls power to the power supply.

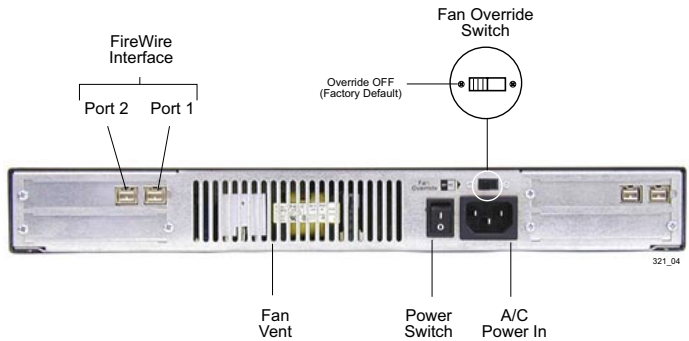

Figure 3: Rear Panel

INSTALLATION

CAUTION: The DS321 chassis contains NO USER SERVICEABLE parts inside the unit. Refer ALL servicing to qualified personnel!

NOTE: Refer to the *Data Express DE110 User's Guide* for additional operating and installation information. Also refer to the disk manufacturer's documentation for specific information regarding the disks.

Drive Preparation

1. Remove the drive from its protective packaging.

2. **Plastic Drive Bezel:** If the drive came equipped with a plastic front bezel, it must be removed before installing the drive into the drive carrier.

3. In most cases, your drive will be factory-configured as a Master Drive using a jumper option on the drive itself. StorCase however, recommends reconfiguring the drive to **Cable Select** instead. This can be done by configuring the jumper option on the drive itself (refer to the drive manufacturer's documentation for further information).

   NOTE: Since specifications (specifically, pin assignments) between drive manufacturers may vary, please refer to your drive manufacturer's documentation for exact information regarding Cable Select configuration.

Drive Installation

1. Remove the DE110 drive carrier(s) from the DS321 chassis.
2. Uninstall the drive cover(s) from the drive carrier(s). Refer to Figure 5.
3. Attach the DC power cable (from the Drive Carrier Board) to the drive (Figure 4).
4. Carefully insert the drive into the carrier. Slide the drive towards the Drive Carrier Board, so that the I/O connector on the drive mates with the connector on the Drive Carrier Board (Figure 4). **Make sure that the DC power cable is not pinched.**
5. Fasten the drive into place with four (4) #6-32 Phillips Flat Hd. screws (Figure 4).
6. Reinstall the provided drive cover (Figure 5).

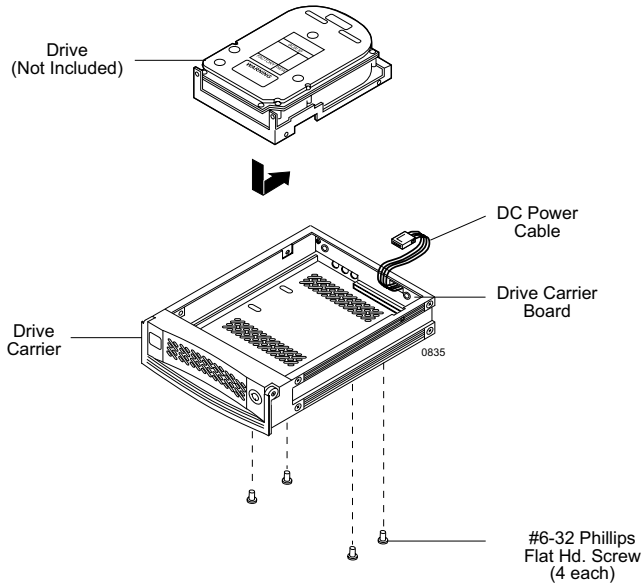

Figure 4: Drive Installation Assembly

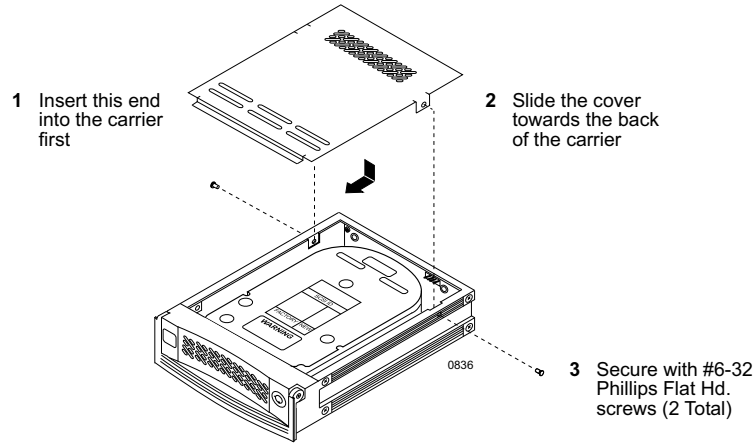

Figure 5: Drive Cover Installation

7. The DE110 drive carrier is now ready to be inserted into the Data Silo.

   NOTE: The lock on the DE110 carrier functions as a lock and a DC power switch for the carrier unit. The lock must be engaged in order to supply power to the carrier and installed drive.

8. Reboot the computer. The new disks is now ready for use, although it may have to be formatted or initialized prior to use with your operating system and applications software.

   WARNING: Unlocking the carrier unit switches DC power OFF to the drive. Since disk drives require a short amount of time to spin down, allow about 15 seconds before pulling the carrier unit out of the receiving frame to avoid possible damage to the drive.

   NOTES: Disable FireWire device on host computer desktop *before* turning OFF power (simply right-click on the “Unplug/Eject Hardware” Icon located in the System Tray and "disconnect").

   For Microsoft® Windows® 2000 applications, DO NOT turn on immediately after turning off power. Wait at least 15 seconds before turning power back on.

Desktop Conversion

NOTE: All necessary desktop conversion hardware is included in the DS321 accessory bag.

1. Unplug the DS321 and verify that ALL cables have been disconnected.
2. Turn the DS321 over and place it on a soft clean surface, so that the bottom is facing upward.
3. Peel paper backing off rubber feet (4 total) and press into place (location indicated by "L" marks) as shown in Figure 6.

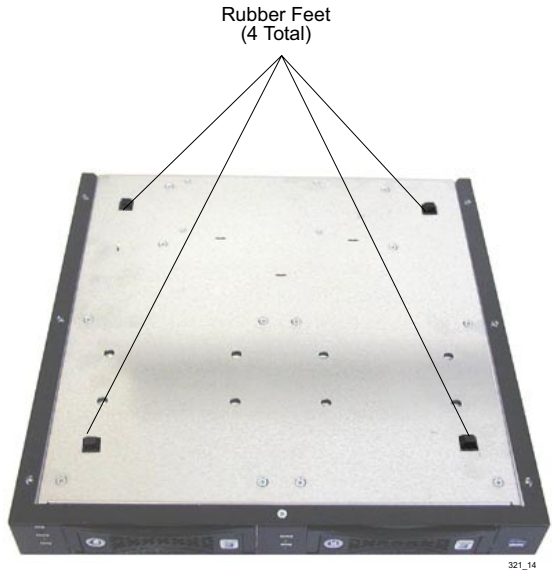

Figure 6: Desktop Conversion

Rack Mount Conversion

NOTE: All necessary rack mount conversion hardware is included in the DS321 accessory bag.

1. Unplug the DS321 and verify that ALL cables have been disconnected.
2. Place DS321 on a soft clean surface.
3. Attach each bracket with four (4) black #6-32 Phillips Flat Hd. screws as shown in Figure 7.

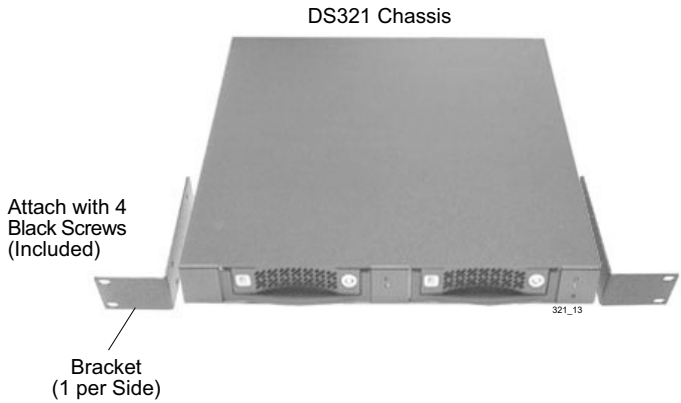

Figure 7: Rack Mount Conversion

Typical FireWire Configurations

NOTES: The installation, configuration, and use of the StorCase Data Silo DS321 FireWire 800-to-IDE chassis requires a certain level of expertise and experience on the part of the user/integrator. Since there are many configuration options and variables (ie. host platforms, applications, etc), only general/typical configuration guidelines will be discussed in this User's Guide.

One (1) 6' FireWire 800-to-FireWire 800 cable, one (1) 20" FireWire 800-to-FireWire 800 cable, and one (1) 6' FireWire 800-to-FireWire 400 cable are provided with *each* DS321 chassis.

Typical Single Host Configurations

NOTE: Depending on configuration, additional FireWire 800 cabling may be required. Contact StorCase for further ordering information.

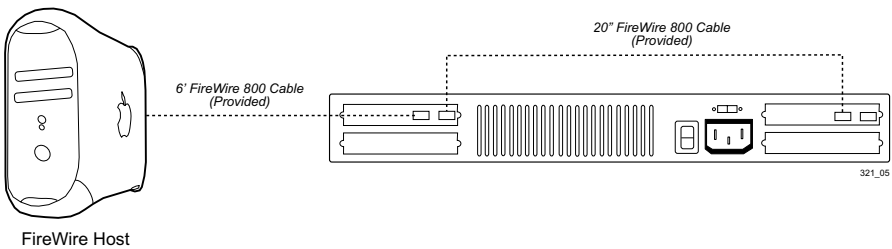

Figure 8: Typical Single Host Connection to One Data Silo

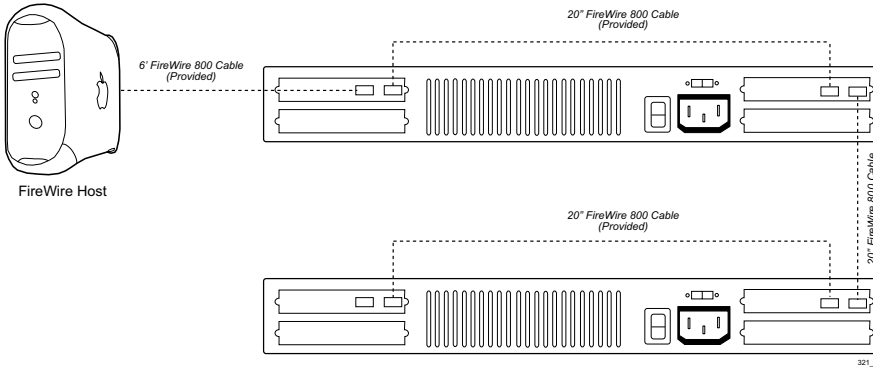

Figure 9: Typical Single Host Connection to Multiple Data Silos

Typical Dual Host Configurations

NOTE: Depending on configuration, additional FireWire cabling may be required. Contact StorCase for further ordering information.

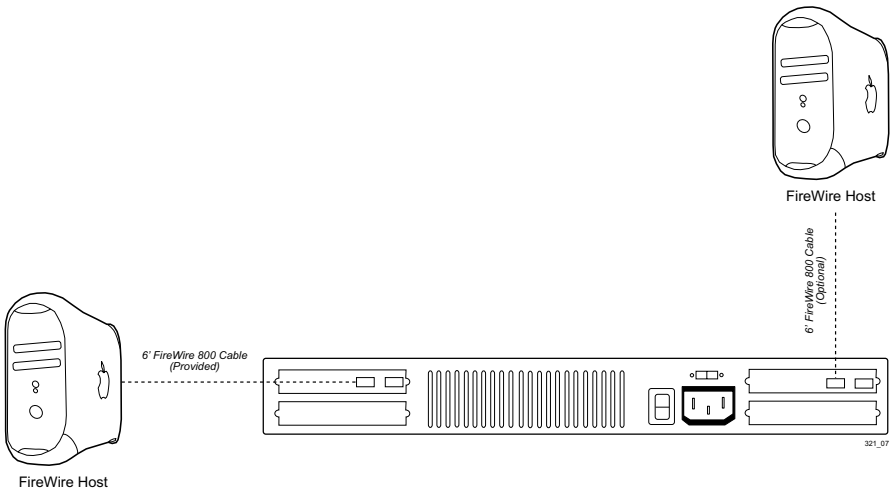

Figure 10: Typical Dual Host Connection to One Data Silo

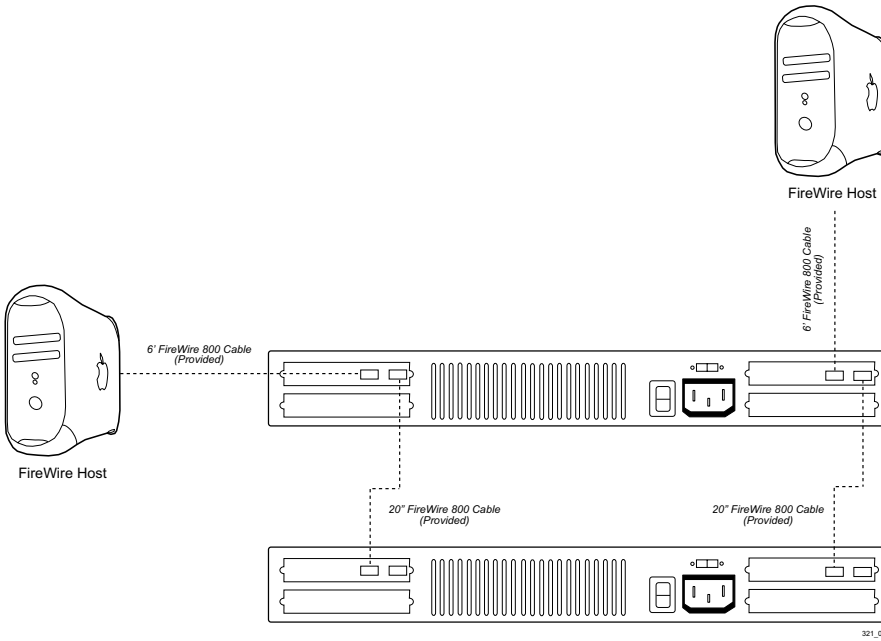

Figure 11: Typical Dual Host Connection to Multiple Data Silos

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APPENDICES

Appendix A - Specifications/Dimensions

The following DS321 specifications and dimensions are provided for reference only.

Environmental Specifications		
	Operating	Storage
Ambient Temperature	0° C to 40° C	-40° C to 70° C
Relative Humidity (1)	10% to 80%	10% to 90%
Altitude	-1000 to 10,000 ft	-1000 to 40,000 ft
	-305m to 3048m	-305m to 12195m
Shock (2)	10g	60g

(1) Non-condensing with maximum gradient of 10% per hour

(2) 11 msec pulse width 1/2 sine wave

Physical Specifications	
Height	1.73" (43.9mm)
Width	14.06" (357.1mm) (1)
Depth	14.05" (356.9mm)
Weight	13.5 lbs (6.1kg) (2)

(1) Width of desktop version

(2) Total weight including 2 DE110 carriers (10.5 lbs without carriers)

Compliance	IEEE-1394b & ATA-5
Max. Transfer Rate	up to 800Mbps
Max. Cable Length	4.5m (14.75 ft)

Electrical Specifications	
(1) Auto-switching 40W Power Supply	
AC Input	115VAC - 230VAC, 50-60Hz
DC Output Continuous	5V at 3.0A, 12V at 2.0A

Chassis Reliability/Maintainability	
MTBF (1)	500,000 Hours
MTTR (2)	5 Minutes
Preventive Maintenance	None

(1) MTBF = Mean Time Between Failure

(2) MTTR = Mean Time To Repair

Fan Air Flow	
Total (For 1 Fan)	5.5 CFM

321_specs

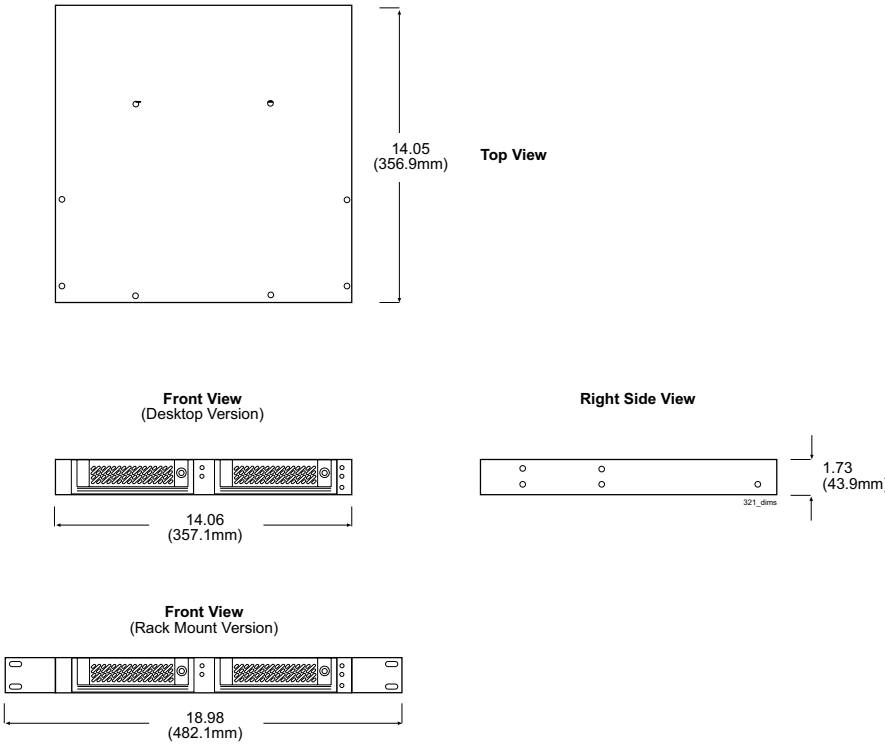

Figure A-1: DS321 Physical Dimensions
(Dimensions are for reference only)

Appendix B - Optional Accessories

FireWire Cables

Additional FireWire cables are available for the DS321 as shown in Figure B-1. Contact StorCase for further ordering information.

6 ft. Beta-to-Beta
(FireWire 800-to-FireWire 800)
Cable

20 in. Beta-to-Beta
(FireWire 800-to-FireWire 800)
Cable

6 ft. Bilingual-to-6 circuit 1394a
(FireWire 800-to-FireWire 400)
Cable

Figure B-1: FireWire Cables

Removable Drive Carriers

Additional DE110 removable drive carriers are available for the DS321 as shown in Figure B-2. Contact StorCase for further ordering information.

Figure B-2: DE110 Drive Carrier

Carrying Case

(Figure B-3)

The optional molded plastic carrying case (P/N S20E101) is designed to transport the DE110 drive carrier from one site to another in a safe, impact and moisture resistant environment. Its compact dimensions, 7" long x 9" wide x 4" high, make it easy to carry and store. The foam lining is contoured to fit a single DE110 carrier. Contact StorCase for further ordering information.

Figure B-3: Carrying Case

Reader's Comments

Please take a few moments when your computer system is up and running to send us your ideas and suggestions for improving our products and documentation. Did the installation go smoothly for you? Are there any changes you would like us to make, either with the hardware itself, or with the installation instructions? Everyone at StorCase Technology is working toward the goal of providing you with the highest quality, most cost effective, products available on the market, and we need your comments to guide our efforts. We look forward to hearing from you soon!

Date: _____

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Your Name: _____

Address: _____

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Telephone: ( ) _____

To mail this page, carefully remove it from the manual, fold it, staple or tape it shut, and drop it in the mail. To FAX this page, carefully remove it from the manual (or make a photocopy) and FAX it to us at (714) 438-1847. Thank you for taking the time to help us make our products better!

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