

## MODELS

### StorageWorks Enclosure 4200

*Model 4214R: 103381-001*

*Model 4214T: 124875-001*

*Model 4254: 138151-001*

*Ultra3 Single Bus I/O Module:  
190212-B21*

*Ultra3 Dual Bus I/O Module:  
190213-B21*

The StorageWorks Enclosure 4200 models provide the following features:

- Ultra2 (LVD) data transfer rates (80 MB/s)
- Support for up to 14 (1-inch) Ultra2 hot pluggable hard disk drives
- 3U rack height
- Ultra3 (LVD) upgradeable
- Hot pluggable disk drives, power supplies, and fan pack
- Redundant fans and redundant power supply (optional on the 4214)
- Single or dual bus I/O capable

## Overview

The StorageWorks Enclosure 4200 is Compaq's new generation Ultra2 SCSI disk enclosure family. These enclosures deliver industry leading data performance, availability, storage capacity, rack density, upgradability and value to meet our customers' demanding and growing computing needs. The StorageWorks Enclosure 4200 family was developed, designed and engineered by Compaq and includes innovations such as support for up to 14 (1-inch) disk drives and the ability to upgrade to Ultra3 in a matter of minutes. The ease of upgrading the StorageWorks Enclosure to Ultra3 provides our customers with smoother technology transitions, lessens the disruptions to the business environment and lowers the total cost of ownership.

### The Compaq StorageWorks Enclosure 4200 family delivers numerous customer benefits including:

- **High Performance** – Ultra2 SCSI transfer rates combined with the highest spindle count per U of rack space allows the StorageWorks Enclosure 4200 to maximize I/Os per second.
- **Investment protection** – With the ability to upgrade, as well as mix and match, existing Ultra2 components with Ultra3, Compaq makes technology transitions simple and cost effective.
- **Smoother Technology Transitions** – With an Ultra2 enclosure that is quick and easy to upgrade to Ultra3, Compaq simplifies the transition to the next generation SCSI protocol.
- **Upgradeability** – Ultra3 single and dual I/O modules make upgrading the StorageWorks Enclosure 4200 to Ultra3 quick and easy.
- **Storage Capacity** – With 14 hard disk drives per 3U of rack space, customers can achieve the maximum storage capacity per square foot.
- **Reduced spares inventory** – A common drive and drive carrier across Compaq's entire Ultra2 product offering. The same drives can be used in servers and external storage.

### Compaq StorageWorks Enclosure 4200 family models

The 4200 enclosure design allows for specific configurations tailored to the needs of all Compaq server customers. Two models are available today:

- Model 4214R – Rack mountable 14 drive enclosure with single bus, single power supply
- Model 4214T – Tower mount 14 drive enclosure with single bus, single power supply
- Model 4254 – Rack mountable 14 drive enclosure with dual bus, dual power supply

## KEY FEATURES

- Ultra2 and Ultra3 (LVD) support
- Supports up to 14 (1-inch) Ultra2 and/or Ultra3 Universal hard disk drives
- Provides storage capacity of up to 254.8 GB per enclosure (using 18.2 GB 1-inch HDD)
- 3U rack height – Allows up to 14 enclosures to be housed in one 42U rack for a single rack storage capacity of up to 3.56 TB of disk storage!
- Modular design allows the 4200 enclosures to be used in any storage configuration from JBOD to external RAID arrays
- Award winning innovative SCA direct connect drive carrier - Provides better cooling and reliability for 10K and next generation drives
- Ultra3 (LVD) upgradeable
- Hot pluggable disk drives, power supplies, and fan pack.
- Redundant fans, redundant power supply<sup>2</sup> and dual bus I/O module
- Environmental Monitoring Unit (EMU) – Monitors environmental conditions within the enclosure and components such as the power supply and fans
- Easy removal of parts for better easy and quick Ultra3 upgradability. No tools required!

## PRODUCT HIGHLIGHTS

### Upgradeability

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Upgrading the StorageWorks Enclosure 4200 to Ultra3 is as easy as swapping out the I/O module on the back of the unit. The I/O module is warm-swappable, therefore during the upgrade power to the unit can remain on, but all I/O operations need to be stopped to ensure that no data is lost or corrupted during the upgrade.

### Mix and Match

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All Ultra3 devices from Compaq are compatible with previous Ultra2 devices so customers can mix and match components on the same storage enclosure or server. When Ultra2 devices and Ultra3 devices are found on the same Ultra3 SCSI bus, each Ultra2 device will transfer data up to 80 MB/s, while each Ultra3 device will transfer data up to 160 MB/s.

### Hot Pluggable

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Hot Pluggable technology is used for drives, power supplies and fans. Hot Pluggable components can be replaced without powering down the storage system. This feature significantly enhances storage system availability.

### Availability and Serviceability

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Storage system units accommodate redundant cooling fans and power supplies. All customer removable modules and units are designed for easy removal to ensure better serviceability.

### Auto SCSI ID Selection

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SCSI ID is automatically set when a drive is inserted into a drive bay

### LED Indicators

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Front panel LEDs indicate drive activity, when a drive requires service, and when power is on or off, giving a quick visual assessment of overall system storage status. LED status and fault indicators for the fans and power supplies are located in the back of the enclosure.

### Rack Density

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All Enclosure 4200 models have a 3U height

### Environment Monitoring Unit (EMU)

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Each Enclosure 4200 model is equipped with an EMU that constantly monitors the enclosure, the power supplies, and fans to ensure suggested operating tolerances are maintained.

### Single Bus I/O Module

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The single bus I/O module allows one SCSI channel to access all drives in the 4200 enclosure.

### Dual Bus I/O Module

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The dual bus I/O module allows two SCSI channels to access a single Enclosure 4200. This allows for greater fault tolerance (controller duplexing) or provides access from two different servers to two separate storage areas.

### Fault Tolerance

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With the dual bus I/O module, redundant power supplies and fans the Enclosure 4200 family provides a high level of system availability. Using an internal or external RAID Array the Enclosure 4200 family can be configured for RAID levels 0, 1, 0+1, 3, 5.

### Manageability

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The 4200 enclosure is managed by Compaq Insight Manager or StorageWorks Command Console depending on the Host server type.

### Compatibility and Integration Testing

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Intensive compatibility and performance testing with Compaq ProLiant and Alpha servers ensures the highest level of integration available in the industry on a Compaq server. For a complete list of supported Compaq servers and workstations, please refer to the QuickSpecs and/or User Guide of the array controller or Host Bus adapter you are planning on using. The list of supported array controllers and SCSI adapters is provided under "Related Options, Controllers."

## PRODUCT HIGHLIGHTS *(continued)*

### Product Kit Contents

**Model 4214:** Single power supply, single bus I/O module, 13 drive blanks<sup>3</sup>, warranty card, mounting hardware, AC power cord, Enclosure 4200 user guide, EMU booklet, SmartStart CD Kit, SPD documentation CD, and one 12-ft VHDCI to VHDCI SCSI cable.

**Model 4254:** Redundant power supplies, dual bus I/O module, 13 drive blanks<sup>3</sup>, warranty card, mounting hardware, AC power cord, Enclosure 4200 user guide, EMU booklet, SmartStart CD Kit, SPD documentation CD, and two 12-ft VHDCI to VHDCI SCSI cables.

**Note:** Where the 4200 enclosure is intended for connection to an HSG80 controller in a Model 2200 controller shelf or a host-based adapter on an Alpha server a different SCSI cable is required. See the related options section for cable ordering information.

## SPECIFICATIONS

<b>Protocol Support</b>	Wide Ultra2 (LVD) Wide Ultra3 (LVD)
<b>O/S Support</b>	Depends on which supported Compaq array controller or SCSI adapter is chosen. Please refer to the QuickSpecs and/or User Guide of the array controller or SCSI adapter you are planning on using.
<b>Dimensions (HxWxD)</b>	
Tower	22.5 x 13.25 x 23 in / 56.7 x 33.9 x 57.96 cm
Rack	5.2 x 19 x 20.5 in/13.1 x 47.88 x 51.66 cm
<b>Shipping Dimensions (HxWxD)</b>	
Tower	34.25 x 14.5 x 31.25 in / 86.31 x 36.54 x 78.75 cm
Rack	34.25 x 14.5 x 31.25 in / 86.31 x 36.54 x 78.75 cm
<b>Weight</b>	
Tower	93 lbs/42.8 kg
Rack	68 lbs/30.9 kg
Redundant Power Supply	5.0 lbs/2.3 kg
<b>LED Indicators (On Front Panel)</b>	EMU Status LED (left) Enclosure Power LED (Middle) Fault LED (Right)
<b>Drive LED Indicators (On Drive Trays)</b>	Drive LED (Top) On Line LED (Middle) Drive Failure LED (Bottom)
<b>Enclosure LED Indicators (back of unit)</b>	I/O Module (top) EMU (middle) Power supplies (bottom)
<b>Input Requirements</b>	
Nominal Line Voltage	110 to 240 VAC
Range Line Voltage	90 to 264 VAC
Line Frequency	47 to 63 Hz
Typical Input Current	2.3A at 120 VAC
<b>Relative Humidity (non-condensing)</b>	
Operating	10% to 90%
Shipping	5% to 90%

## SPECIFICATIONS *(continued)*

### Controllers and Adapters Supported

Smart Array 4200 Controller  
 Smart Array 3200 Controller  
 Smart Array 431 Controller  
 Smart Array 221 Controller  
 HSG80 Controller  
 HSG60 Controller  
 64-Bit Dual Channel Wide Ultra2 SCSI Adapter  
 64-Bit Dual Channel Wide Ultra3 SCSI Adapter  
 1 channel Wide Ultra2 Adapter (AlphaStations)  
 1 channel Wide Ultra2 Adapter (AlphaServers)  
 See your server and controller compatibility matrix for details on controller and server compatibility.

### I/O Module Connector

Very High Density Cable Interconnect (VHDCI)

### BTU (220 Volts)

Single power supply 14 drives	1164 BTUs/hour
Single power supply 5 drives	536 BTUs/hour
Single power supply 1 drive	273 BTUs/hour
Dual power supply 14 drives	1232 BTUs/hour
Dual power supply 5 drives	625 BTUs/hour
Dual power supply 1 drive	352 BTUs/hour

### Power

377 Watts per supply (load)

### Temperature Range<sup>3</sup>

Operating	50° to 94°F / 10° to 35°C°
Shipping	-40° to 151°F / -40° to 66°C

### Warranty

StorageWorks Enclosure 4200 family: Three-year<sup>4</sup> limited warranty (1 year on-site, 2 year carry-in)

Hard drive Pre-Failure Warranty : When used with any one of the StorageWorks Smart Array Family controllers and monitored under Compaq Insight Manager (v4.20 or higher), the drives are supported by a Pre-Failure (replacement) Warranty<sup>5</sup>.

## RELATED OPTIONS

### Controllers

Smart Array 221 Controller	388099-B21
Smart Array 431 Controller	127695-B21
Smart Array 3200 Controller	295643-B21
Smart Array 4200 Controller	295636-B21
64-Bit Dual Channel Wide-Ultra2 SCSI Adapter	348757-B21
64-Bit Dual Channel Wide-Ultra3 SCSI Adapter	129803-B21
HSG80 Controller	176622-B21
HSG60 Controller	174164-B21
1 Channel Ultra2 (LVD) Adapter (AlphaServer)	136237-B21
1 Channel Ultra2 (LVD) Adapter (AlphaServer)	3X-KZPCA-AA

## RELATED OPTIONS *(continued)*

### Other Options

StorageWorks Enclosure 4200 Redundant Power Supply Option	119826-B21
StorageWorks Enclosure 4200 Dual Bus I/O module	119829-B21
StorageWorks Enclosure 4200 Tower to Rack Conversion Kit	150213-B21
Ultra3 Single I/O Module Upgrade Kit	190212-B21
Ultra3 Dual I/O Module Upgrade Kit	190213-B21
Compaq Rack Model 7142 <sup>1</sup>	165753-001
Compaq Rack 9142 <sup>1</sup>	120663-B21
Compaq Rack 9136 <sup>1</sup>	120664-B21
Compaq Rack 9122 <sup>1</sup>	120665-B21

### Hot Pluggable Ultra2 (LVD) Hard Drives<sup>6</sup>

18.2-GB Pluggable Ultra3 SCSI 10,000 rpm Drive (1")	142673-B22
9.1-GB Pluggable Ultra3 SCSI 10,000 rpm Drive (1")	142671-B22
18.2-GB Pluggable Ultra2 SCSI 10,000 rpm Drive (1")	128418-B22
18.2-GB Pluggable Ultra2 SCSI Drive (1")	388144-B22
9.1-GB Pluggable Ultra2 Universal 10,000 rpm Drive (1")	328939-B22
9.1-GB Pluggable Ultra2 Universal Drive (1")	123065-B22

### SCSI Cable Options

1M SCSI cable for connection to the Model 2200	168256-B21
2M SCSI cable for connection to the Model 2200	168257-B21
3M SCSI Cable for connection to the Model 2200	188505-B21
5M SCSI cable for connection to the Model 2200	400983-005
10M SCSI cable for connection to the Model 2200	400985-010
12' VHDCI – 68 Pin SCSI Cable	313375-002
1M SCSI 68HD Cable	BN38C-01
2M SCSI 68HD Cable	BN38C-02
3M SCSI 68HD Cable	BN38C-03
5M SCSI 68HD Cable	BN38C-05
10M SCSI 68HD Cable	BN38C-10
12' VHDCI – VHDCI SCSI Cable	341175-B21/291
24' VHDCI – VHDCI SCSI Cable	164604-B21/291
39' VHDCI – VHDCI SCSI Cable	150214-B21/291

<sup>1</sup> Certain power support and cooling restrictions apply when housing a maximum number of Model 4214R enclosures in one of the supported Compaq racks. Please refer to <http://www.compaq.com/products/storageworks> for more information or consult the Compaq Customer Support Center at 1-800-345-1518 for details. Please note this web site is available in English only.

<sup>2</sup> Each Enclosure 4214R and 4214T comes with a single power supply that is sufficient to provide power to the enclosure and maintain normal operating levels. A second redundant power supply (optional) is recommended for higher levels of fault tolerance and availability.

<sup>3</sup> To maintain proper cooling and air-flow, a drive blank or drive must occupy all bays during operation.

<sup>4</sup> Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center at 1-800-345-1518 for details. In Canada, consult the Product Information Center at 1-800-567-1616 for details.

<sup>5</sup> Pre-Failure Warranty is available on all Compaq Prosignia and Compaq ProLiant servers using Compaq Insight Manager v4.20 or higher, and covers Pentium® Pro processors, ECC memory, server hard drives, and external storage enclosure hard drives (except the 535 MB Fast-SCSI-2 hard drive) using Compaq IDA, IDA-2, Compaq SMART SCSI Array Controllers, Compaq SMART-2 Array Controllers or Compaq Smart Array Controllers. Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center at 1-800-345-1518 for details.

<sup>6</sup> For complete compatibility information, refer to the Compaq SCSI Hard Drive Compatibility table located at <http://www.compaq.com/products/servers/storage/compatibility.html> and <http://www.compaq.com/products/server/storage/non-hotplug-compatibility.html>. Please note these web sites are available in English only. Using hard drives in unsupported configurations will result in voiding of the warranty and could result in damage to the drive and/or loss of data.