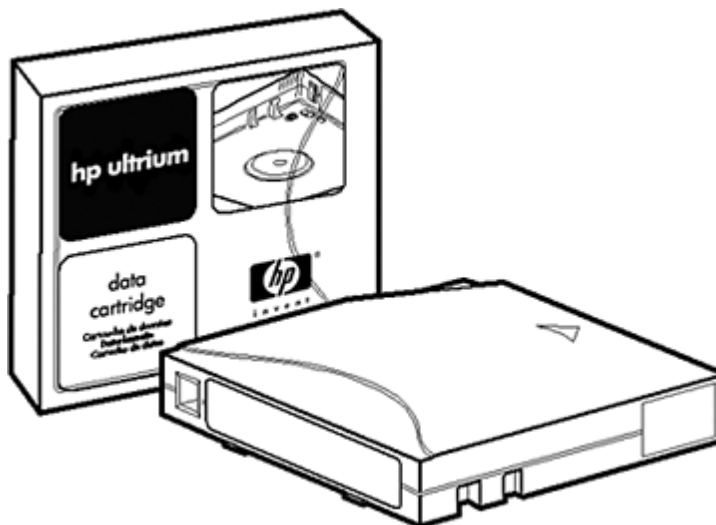


Overview

HP Ultrium tape technology has been designed to deliver exceptional reliability and performance at the lowest cost per GB. The Ultrium format builds on the best of existing technologies; open standards increase innovation and widen customer choice in terms of performance, capacity, and form factor. Backed by HP's exhaustive media qualification process, HP Ultrium data cartridges support all HP StorageWorks and non HP Ultrium tape devices. The latest third Generation products minimize interruption to network and SAN backup by being capable of protecting 576GB GB/hour of data and storing up to 800GB on one piece of media (double the capacity of Ultrium 2 tapes). HP offers Ultrium media in both labeled and unlabeled formats. Custom Labeled data cartridges are for customers that need to define the exact barcode sequence on their labels (available USA and Europe), and Non-Custom Labeled products are for customers who do not need to define the exact barcode sequence on their labels (available worldwide).



Models		
	HP Ultrium 800GB RW Data Cartridge	C7973A
	HP Ultrium 800GB WORM Data Cartridge	C7973W
	HP Ultrium 800GB Custom Labeled Data Cartridge (20pk)	C7973AL
	HP Ultrium 800GB WORM Custom Labeled Data Cartridge (20pk)	C7973WL
	HP Ultrium 800GB RW Non-Custom Labeled Data Cartridge (20pk)	C7973AN
	HP Ultrium 400GB Data Cartridge	C7972A
	HP Ultrium 400GB Custom Labeled Data Cartridge (20pk)	C7972AL
	HP Ultrium 400GB Non-Custom Labeled Data Cartridge (20pk)	C7972AN
	HP Ultrium 200GB Data Cartridge	C7971A
	HP Ultrium 200GB Custom Labeled Data Cartridge (20pk)	C7971AL
	HP Ultrium 200GB Non-Custom Labeled Data Cartridge (20pk)	C7971AN
	HP Ultrium Universal Cleaning Cartridge	C7978A
	HP Ultrium 1 Bar Code label pack	Q2001A
	HP Ultrium 2 Bar Code label pack	Q2002A
	HP Ultrium 3 RW Bar Code label pack	Q2007A
	HP Ultrium 3 WORM Bar Code label pack	Q2008A

Overview

Key Features & Benefits

- UP to 800 GB compressed capacity.
- Supports transfer speeds of 80 MB/s (native), 160 MB/s (2:1) with Generation 3
- For use in all HP and non-HP LTO Ultrium products.
- Unique colored cartridge to assist with identification in mixed media environments.
- Superior 'smart grabber' mechanism and mechanical interlock to prevent the leader pin from being pulled inside the tape housing (a key weakness of DLT media). Sensors detect proper connection and prevent leader loss that would ruin the tape.
- Simplified tape path to reduce wear and tear.
- Lowest media cost per GB at launch of any tape technology.
- LTO cartridge memory in media to improve access time and provide enhanced media monitoring.
- Durable cartridge designed to minimize wear and debris (important in automation).
- Tested to extremes in HP's media laboratory, to a level of specification unique to Hewlett-Packard. Many of the test procedures required for HP Brand qualification (e.g. load/unload, shoeshine, drop testing and thermal aging) are not required for the Ultrium logo.
- HP's offers both labeled (Custom Labeled and Non-Custom Labeled) and non-labeled data cartridges.
- Custom labeled offerings allow automation customers the ability to customize their label to their specific needs. This includes the ability to define the barcode label type and to specify an exact label sequence. Custom labels are pre-attached to the media before shipment. Available in Europe and the USA. Europe requires a Minimum Order Quantity of 5 units or 100 total data cartridges (5 units X 20 cartridges).
- HP Non-Custom Labeled media allows automation customers the ability to receive labeled media without having to wait for a custom labeled solution. Barcode sequences are pre-determined by HP and are guaranteed to be unique. LTO-1 and LTO-2 products utilize the double barcode format whereas LTO-3 utilizes the single barcode format. HP Non-Custom Labeled media is available worldwide.
- All labeled solutions are shipped in 20 packs.

Product Highlights

Proven Reliability

HP ensures the highest level of quality with media specifications that far exceed industry standards.

- HP has 20 custom-built testing chambers that are in use 24 hours per day, 365 days per year.
- It is doubtful if any other media supplier carries out such exhaustive qualification of the drive and media as they are used in the field. This is because no media supplier is exposed to support of hardware in the field and has a vested interest in reducing media-induced hardware issues.
- In 2001, 170,000 different media tests were performed, accounting for 1.3 million test hours.
- HP testing includes procedures like drop testing, load/unload, environmental stress tests and archival simulation that are not required to gain the Ultrium logo.

LTO Ultrium tape technology uses a "best of breed" technology approach, taking the best features from other tape technologies and combining them into a single new technology without the need for design compromises to accommodate legacy compatibility requirements. Designed for the demanding environment of large-scale libraries, Ultrium media is certified for 1 million passes or 260 full back ups and has a 30-year archival storage life.

HP Branded Media Specification

HP believes that its test program for HP Ultrium media is the most thorough and comprehensive in the industry. In order to carry the HP Brand, designated cartridges must satisfy an exhaustive battery of additional procedures that relate directly to how the product is used in real life situations when real data and real businesses are at stake. Some of these procedures - e.g. "five corner" environmental interchange, load/unload for automation, ageing simulation and drop testing are not found in the standard logo test. Over 1 million test hours on media and drives per year ensures that HP Ultrium media will always offer maximum reliability even in the most extreme conditions.

Ultrium 3 Tape Technology

Ultrium 3 tape drive technology uses a linear format of 706 tracks, writing sixteen (16) tracks simultaneously. The data is written in a serpentine pattern; the tape reverses direction after each set of sixteen tracks is written.

Ultrium formats are open standards. This means that data written on any HP StorageWorks Ultrium tape drive for ProLiant servers, autoloaders, MSL or ESL can be interchanged directly with Ultrium tape drives from other vendors.

Compression

LTO-DC is an enhanced version of Advanced Lossless Data Compression (ALDC) hardware compression. Compression is automatically turned "off" if the compressed data would cause an overall expansion in data size.

Compatibility Testing

HP Ultrium data cartridges are fully supported and compatible with HP StorageWorks Ultrium tape products. Because HP Ultrium media is Ultrium logo compliant, it may be used with any other non-HP device that bears the Ultrium logo.

Backward Read Compatible

	LTO-1 Drive	LTO-2 Drive	LTO-3 Drive
LTO-1 Media	Read/Write	Read/Write	Read Only
LTO-2 Media	No Action	Read/Write	Read/Write
LTO-3 Media	No Action	No Action	Read/Write

Product Highlights

Why Buy LTO?

If you have not yet standardized on a large-tape format then LTO Ultrium tape technology is the preferred choice offering:

- Highest reliability through no compromise design and innovative features like Data Rate Matching.
- High capacity to meet the challenges of data deluge
- High performance - even on slower hosts
- An industry standard - Linear Tape-Open format
- Investment protection - with a four-generation roadmap with plans to deliver an 800 GB (native) tape drive by the year 2006.

Warranty and Support

Includes a limited lifetime warranty, fully supported by a worldwide network of resellers and service providers as well as toll-free 24 X 7 technical phone support during the warranty period. For full details on warranty and support for pre-labeled media, please go to:

<http://www.hp.com/products1/storage/products/storagemedia/index.html>.

Options

Related Hardware Options

NOTE: This is a list of supported hardware options. Some may be discontinued.

HP StorageWorks MSL5030 Tape Library	MSL5030, 0 DRV, RM Library	301897-B21
	MSL5030, 1 DRV, LTO Ultrium 230, RM Library	301897-B22
	MSL5030, 2 DRV, LTO Ultrium 230, RM Library	301897-B23
	MSL5030, 1 DRV, LTO Ultrium 230, embedded Fibre, RM Library	301897-B24
	MSL5030, 2 DRV, LTO Ultrium 230, embedded Fibre, RM Library	301897-B25
	MSL5030, 1 DRV, LTO Ultrium 230, TT Library	301898-B21
	MSL5030, 2 DRV, LTO Ultrium 230, TT Library	301898-B22
	MSL5000 LTO Ultrium 230 upgrade drive in hot plug canister	301901-B21
HP StorageWorks MSL5060 Tape Library	MSL5060, 0 DRV, Ultrium 230, RM Library	301899-B21
	MSL5060, 2 DRV, Ultrium 230, TT Library	301900-B21
	MSL5060, 2 DRV, Ultrium 230, RM Library	301899-B22
	MSL5060, 2 DRV, Ultrium 230, embedded Fibre, RM Library	301899-B23
HP StorageWorks MSL6030 Tape Library	MSL6030, 0 DRV, RM Library	330731-B21
	MSL6030, 1 DRV, LTO Ultrium 460, RM Library	330731-B22
	MSL6030, 2 DRV, LTO Ultrium 460, RM Library	330731-B23
	MSL6030, 1 DRV, LTO Ultrium 460, embedded Fibre, RM Library	330731-B24
	MSL6030, 2 DRV, LTO Ultrium 460, embedded Fibre, RM Library	330731-B25
	MSL6030, 1 DRV, LTO Ultrium 460, TT Library	330788-B21
	MSL6030, 2 DRV, LTO Ultrium 460, TT Library	330788-B22
HP StorageWorks MSL6060 Tape Library	MSL6060, 0 DRV, Ultrium 460, RM Library	331196-B23
	MSL6060, 2 DRV, Ultrium 460, TT Library	331195-B21
	MSL6060, 2 DRV, Ultrium 460, RM Library	331196-B21
	MSL6060, 2 DRV, Ultrium 460, embedded Fibre, RM Library	331196-B22
HP StorageWorks ESL9322 Tape Library	ESL9322 Base Library, 0 drive library, 222 slots	330832-B21
	ESL9322 Extended Tape Library, 0 drive library, 222 slots	343377-B21
	NOTE: Model includes Interface Manager (card cage), Command View ESL (management software).	
	ESL9000 Ultrium 460 Drive Upgrade Kit	330834-B21
	ESL9000 Ultrium 230 Drive Upgrade Kit	301930-B21
HP StorageWorks ESL9595 Tape Library	ESL9595 Base Library, 400 slot, 0 drive, Enterprise Library	330833-B21
	ESL9595 Extended Tape Library, 400 slot, 0 drive, Enterprise Library	343378-B21
	NOTE: Model includes Interface Manager (card cage), Command View ESL (management software).	
	ESL9000 Ultrium 460 Drive Upgrade Kit	330834-B21
	ESL9000 Ultrium 230 Drive Upgrade Kit	301930-B21
HP StorageWorks Ultrium 215 Tape Drive	Ultrium 215, Array Module, Worldwide (flint grey)	C7492A
	Ultrium 215, Internal (carbon)	Q1543A
	Ultrium 215, External (carbon)	Q1545A

Options

HP StorageWorks Ultrium 230 Tape Drive	Ultrium 230, Array Module (flint grey)	C7470A
	NOTE: Offline hot-swap tape drive for HP StorageWorks Tape Array 5300.	
	Ultrium 230, Internal (carbon)	Q1515A
	Ultrium 230 for ProLiant, External, International (carbon)	Q1517A
HP StorageWorks Ultrium 460 Tape Drive	Ultrium 460, Array Module (flint grey)	Q1512A
	NOTE: Offline hot-swap tape drive for HP StorageWorks Tape Array 5300	
	Ultrium 460, Internal (carbon)	Q1518A
	Ultrium 460, External (carbon)	Q1520A
HP StorageWorks Ultrium 960 Tape Drive	HP StorageWorks Ultrium 960 Internal Tape Drive	Q1538A
	HP StorageWorks Ultrium 960 External Tape Drive	Q1539A
	HP StorageWorks Ultrium 960 Array Module	Q1540A
	HP StorageWorks Ultrium 960 Rack-mount	Q1595A
HP StorageWorks 1/8 Tape Autoloader	1/8 Ultrium 230 Tape Autoloader	C9572CB
	NOTE: One Ultrium 230 drive, eight slot autoloader, desktop model; autoloader can be rack-mounted with optional rack-mount kit.	
HP StorageWorks SSL1016 Tape Autoloader	SSL1016 Ultrium 460 Tape Autoloader	330821-B21
	NOTE: One Ultrium 460 drive, 16-slot autoloader, rack-ready model; includes remote management card, barcode reader and tabletop conversion kit.	

Technical Specifications

	Ultrium 1	Ultrium 2	Ultrium 3	Ultrium CC
Magnetic Material	Metal Particle	Metal Particle	Metal Particle	Metal Particle
Basefilm	PEN (Polyethylene Napthalate)	PEN (Polyethylene Napthalate)	PEN (Polyethylene Napthalate)	PEN (Polyethylene Napthalate)
Recording Density	124 kbits/inch	188 kbits/inch	245 kbits/inch	N/A
Number of Data Tracks	312	584	704	N/A
Recording Capacity	100/200 GB	200/400 GB	400/800 GB	N/A
Coercivity	1800 - 1900 Oe	2100 - 2400 Oe	2500 - 2700 Oe	N/A
Tape Width (mm)	12.65	12.65	12.65	12.65
Tape Thickness (um)	8.9	8.9	8.9	8.0
Tape Length (m)	609	609	680	319
External Dimensions	1.8 x 4.45 x 4.37 in (2.1 x 11.3 x 11.1 cm)	1.8 x 4.45 x 4.37 in (2.1 x 11.3 x 11.1 cm)	1.8 x 4.45 x 4.37 in (2.1 x 11.3 x 11.1 cm)	1.8 x 4.45 x 4.37 in (2.1 x 11.3 x 11.1 cm)
Cartridge Weight	0.63 lb (285.2 g)	0.63 lb (285.2 g)	0.63 lb (285.2 g)	0.63 lb (285.2 g)
Durability	1,000,000 passes on any area of tape, equates to over 20,000 end-to-end passes/260 full tape backups			
Archival Life	30 years	30 years	30 years	30 years
Tape Length (m)	609	609	680	319
Environmental Requirements <i>(Media should not be used outside of these parameters)</i>	Operating Temperature	50° to 113° F (10° to 45° C)		
	Day to Day Storage Temperature	60° to 90° F (16° to 32° C)		
	Long Term Storage Temperature - Ambient	41° to 73° F (5° to 23° C)		
	Maximum Wet Bulb Temperature	79° F (26° C)		
	Non Condensing Relative Humidity	10 to 80% (Operating) 20 to 60% (Archival)		

© Copyright 2006 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.