

# LTO Ultrium

## Data Cartridge

The Dawn of a New Era in Ultra-High-Capacity Storage

Fujifilm servo technology

Large storage capacity [up to 800GB]    Amazingly high transfer speeds  
Enhanced reliability



LTO Ultrium 3 WORM

# LTO Ultrium technology - the standard in high-capacity, high-reliability data storage

The 21<sup>st</sup> century requires new, cost-effective data storage solutions. LTO Ultrium tape cartridges – which serve the needs of network servers, enterprise computers, and other demanding environments – are the answer for such needs.

## Large Storage Capacity

High recording density is a crucial factor in tape capacity, and Fujifilm draws on its long experience in tape manufacture technologies to create tapes with up to 800GB (2:1 compressed; 400GB native) capacity on a single cartridge to meet the needs of the most demanding applications.

## Enhanced Reliability

Fujifilm's patented ATOMM technology incorporates a unique ultra-thin dual-coating system that contributes to the remarkable durability and stability of LTO Ultrium data cartridges. The tape also incorporates an improved PEN\* basefilm that is very stable under environmental change - an important consideration in a medium which has been designed to withstand years of heavy daily use and extended archival storage.

\* PEN: Polyethylenephthalate

## Amazingly High Transfer Speeds

Increased performance (measured by higher transfer speeds) means less time spent on backups and archive operations, and greater overall efficiency. LTO Ultrium data cartridges deliver impressive data transfer rates of 80-160MB/s (2:1 compressed; 40-80MB/s native).

## Fujifilm Servo Technology

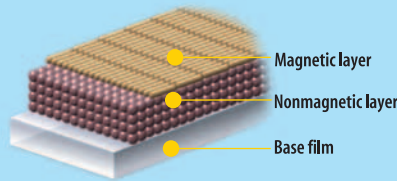
LTO Ultrium technology relies heavily on timing-based, high-precision servo control to achieve its remarkable performance levels. LTO Ultrium data cartridge uses dual servo tracks that have been precisely written along the entire length of each of its four data bands, for extremely fine placement control and redundancy in the event of tape damage.

## LTO Ultrium 3 WORM ( Write Once Read Many ) Data Cartridge

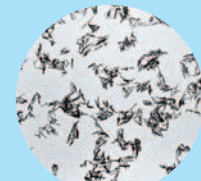
LTO 3 WORM functionality allows secure backup and storage of critical data for companies charged with adhering to strict legal and regulatory procedures. Once data has been written to WORM tape, it cannot be altered, making it an ideal solution for compliance.

## ATOMM technology

ATOMM (Advanced Super Thin-Layer & High-Output Metal Media) features a nonmagnetic lower layer and an ultra-thin upper layer of high-energy metal particles simultaneously applied to a base film. This unique configuration results in extremely low self-demagnetization and dramatically increased high frequency output, allowing significantly higher recording density.



ATOMM's double layer structure



ATOMM's metal magnetic particles

**What is LTO?** LTO stands for "Linear Tape-Open" technology – a new open-standard specification designed to address the needs of mid-range tape backup applications. The standard was developed by a consortium of Certance, Hewlett-Packard and IBM – and it represents a scalable and durable tape-storage format whose future growth (going all the way up to 1.6TB (2:1 compressed; 800GB native) configurations) has been mapped out for an extended period into the future.

LTO Roadmap	1st Generation	2nd Generation	3rd Generation	4th Generation
CAPACITY	Max. 200GB (compressed) 100GB (native)	Max. 400GB (compressed) 200GB (native)	Max. 800GB (compressed) 400GB (native)	Max. 1.6TB (compressed) 800GB (native)
TRANSFER RATE	Max. 40 MB/s	Max. 80 MB/s	Max. 160 MB/s	Max. 320 MB/s
NUMBER OF TRACKS	384	512	704	1024

## Specifications

Cartridge Type	LTO Ultrium 3 Data Cartridge	LTO Ultrium 2 Data Cartridge	LTO Ultrium 1 Data Cartridge	LTO Ultrium 3 WORM Cartridge	Universal Cleaning Cartridge*	
Basic Specifications	Capacity (Compressed)	400 GB (800 GB)	200 GB (400 GB)	100 GB (200 GB)	400 GB (800 GB)	—
	Transfer Rate (Compressed)	40-80 MB/s (80-160 MB/s)	20-40 MB/s (40-80 MB/s)	10-20 MB/s (20-40 MB/s)	40-80 MB/s (80-160 MB/s)	—
	Number of Tracks	704	512	384	704	—
	Servo Band	5 Magnetic Servo Bands				—
	Cartridge Memory	32,768 Bits (4,096 Bytes) ; Internal EEPROM				—
	Media Durability (Nominal)	1,000,000 passes				—
Physical Characteristics	Estimated Archival Life	30 years				—
	Tape Width	12.65 mm				—
	Tape Thickness	8.0 m	8.9 m		8.0 m	—
	Tape Length	680 m	609 m		680 m	319 m
Operating Environmental Conditions	Cartridge Dimensions (LxWxH)	102 x 105.4 x 21.5 mm				—
	Temperature	10 ~ 45 C				—
	Humidity	10 ~ 80 % (No Dew Condensation)				—
Archival Environmental Conditions	Max. Wet Bulb Temperature	26 °C				—
	Temperature	16 ~ 32 C				—
	Humidity	20 ~ 80 % (No Dew Condensation)				—
	Max. Wet Bulb Temperature	26 °C				—

Note: Specifications are subject to change without notice.

Linear Tape-Open, LTO, LTO Logo, Ultrium and Ultrium logo are trademarks of Hewlett-Packard, IBM and Certance in the US, other countries or both. \* The universal cleaning cartridge is capable of being used in all generation 1/2/3 Ultrium format tape drives. Specific revisions of firmware may be required for proper operation.

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