

LTO Video Archiving Recorder

LTR-100HS/120HS

FOR.A[®]
INNOVATIONS IN VIDEO
and AUDIO TECHNOLOGY

**LTO-6 Model
Available!**

LTO VIDEO ARCHIVING RECORDER
LTR-100HS/120HS



Re-defining Media Archive Workflows

The LTR Series is a standalone video archiving recorder fitted with an LTO (Linear Tape Open) drive. By adopting enormous volume of Terabyte and capability of LTF5 file data, LTR series recorders can be used as platforms for material or program exchange.

This series offers many useful features, including HD/SD-SDI input/output, broadcast quality codec, and MXF (OP-1a) wrapping and unwrapping. MXF files recorded on LTO can also be used with non-linear editing systems.

LTR series benefits

Enables users to build an archive system entirely based on LTR technology

- Redefine video archive workflows: The entire archiving workflow, from ingest, distribution, archiving and re-purposing, is possible using only one unit
- Provides simple, high cost-performance without a large-scale file server
- Reduces the operation maintenance necessary for system operation



Provides extended recording solutions using highly reliable, versatile LTO*1 technology

- The media has massive storage capacity (Max. 2.5 TB) yet is compact, helping to save space
- One unit supports 80 hours of recording
- Open-standards-based, highly versatile, excellent storage stability
- Secure and low-cost media; perfect as a material exchange media



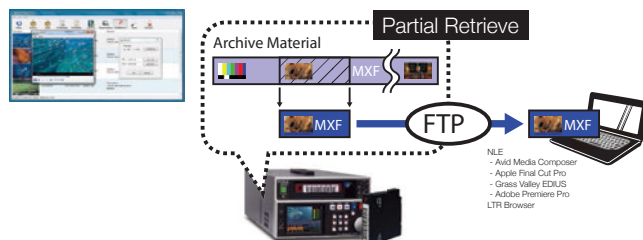
LTO-6 Support!
(LTR-100HS6/LTR-120HS6)

Video equipment that also functions as a convenient IT device

- Elements that are indispensable for file base solutions, including proxy file generation, thumbnail generation, and meta data input, are provided as standard
- File system LTF5*2: Enables reading and writing of files from PC as a material exchange media
- FTP feature: Functions as an FTP server to read and write files freely on the LTO via the FTP
- Partial retrieval feature: Loads the specified range of MXF files on LTO tape and efficiently reuses them with non-linear editing software
- Simultaneous creation of proxy files during ingest: Supports system links such as automatic proxy file transfers to media management systems

LTR Browser (optional)

- Remote control software used for accessing the LTO tape mounted in the LTR/LTS series recorder from a PC. (Windows and Mac versions available.)
- Main functions: File input/output with meta data and correcting meta data, sending partial retrieve command while viewing proxy video, etc.



Operates like a VTR; compact design

- Emphasis is on operability with a VTR-like front panel, various buttons, Jog/Shuttle, and a liquid-crystal display
- Ingest is possible simply by pressing REC and PLAY
- VTR-like operations are possible, including Jog/Shuttle, fast-forward, and rewind (Only for built-in HDD cache data)
- Compact 3 RU high, half-rack wide chassis



Emphasis on video quality and secure content

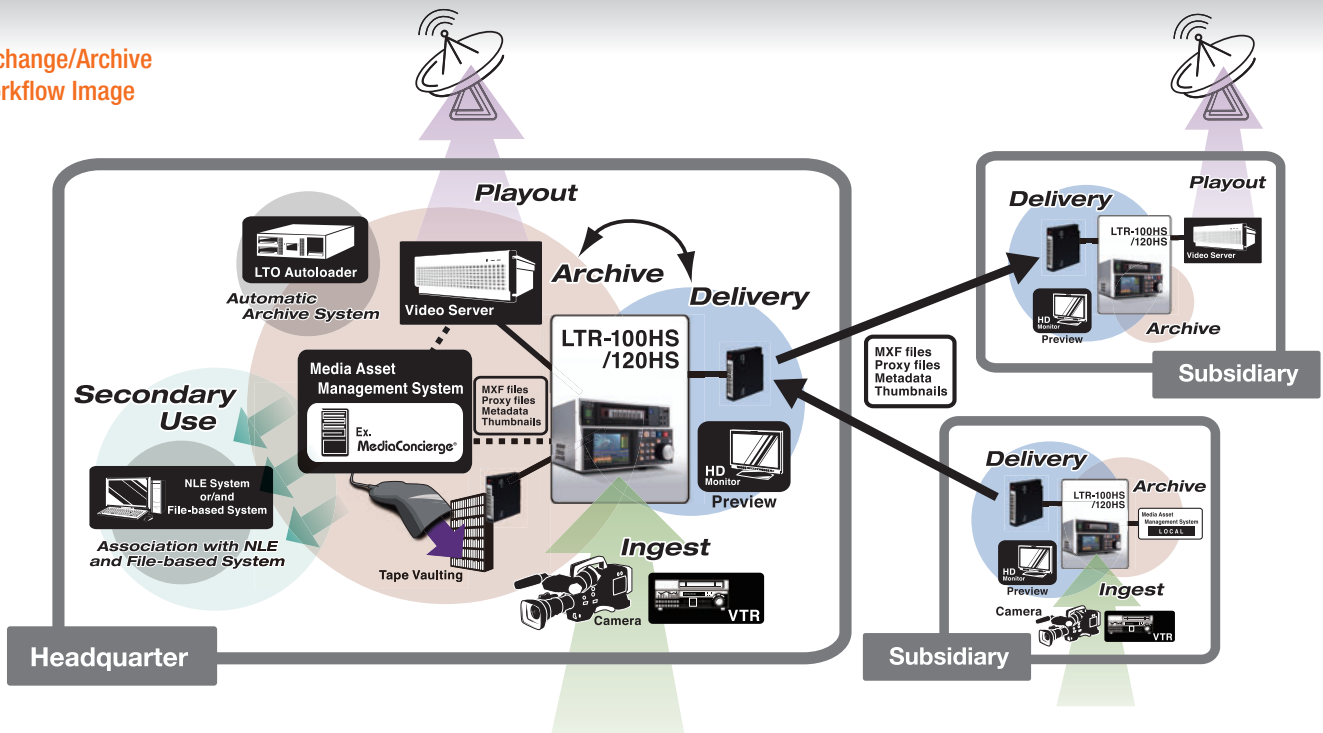
- Thought given to forward compatibility of video material by adopting open technologies such as MXF OP-1a, LTO, and LTF5 (During recording).
- Includes broadcast quality video codec; high-quality video recording (LTR-100HS: MPEG-2, LTR-120HS: AVC-Intra/DVCPRD)
- Easy to use because of the familiar feel of the tape-like media.
- Check feature for securely writing important data (Read While Write feature).

Expandability for building systems

- RS-422: External VTR control (for recording)
- Gigabit Ethernet: File input/output
- USB 2.0: Bar code reader, keyboard connection
- Remote API: Application programming interface (API) for remote control operation from another system or software via LAN. (For further details, contact FOR-A Company Ltd.)

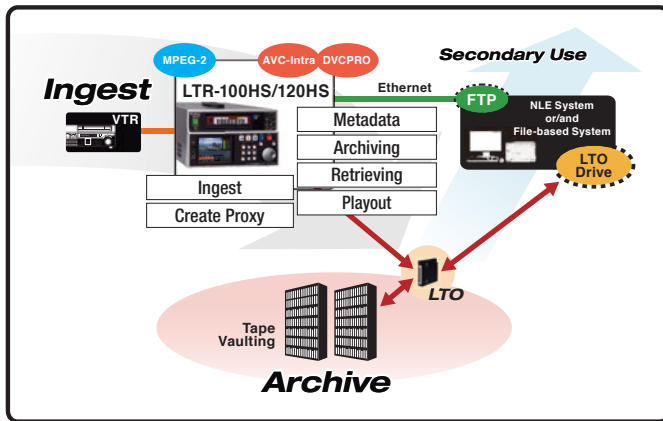


Exchange/Archive Workflow Image

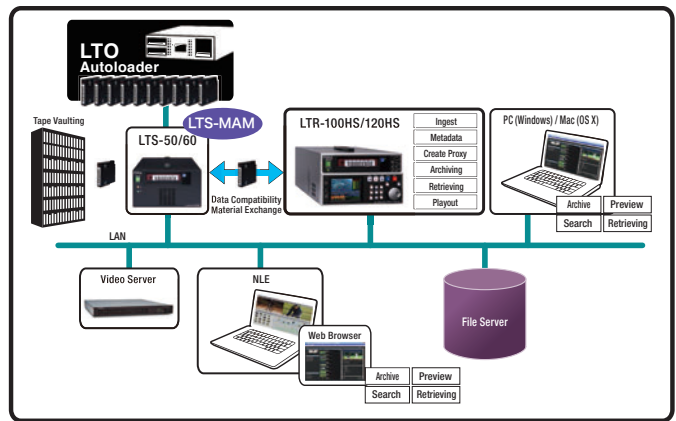


Application Examples

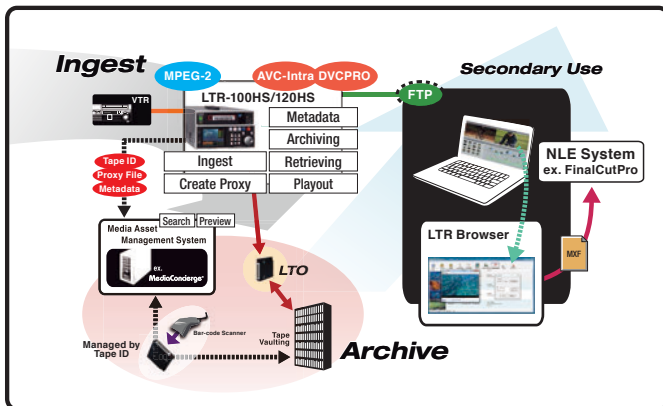
Simple Archive/Long Time Recording



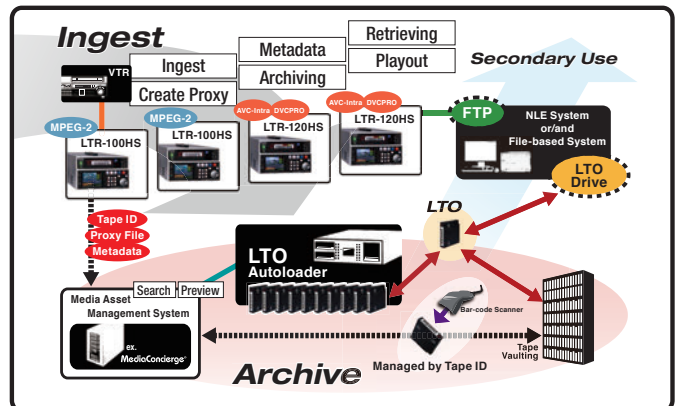
Offers data compatibility with LTS-50/60 and video material support



NLE System (Partial Retrieve)



Association with Cart System (Middle/Big Archive)



*1: What is LTO?

Initialism of Linear Tape Open Standard for magnetic tape storage devices co-developed by IBM, Hewlett-Packard and Seagate Technology.

*2: What is LTF5?

Initialism of Linear Tape File System. Enables users to check file information in the LTO tape from the index data; reads and writes each file onto LTO individually, as with an external storage.

Specifications

Model Name	LTR-100HS	LTR-100HS6	LTR-120HS	LTR-120HS6
Video Formats	HD: 1080/59.94i, 1080/50i, 720/59.94p, 720/50p, SD: 525/60, 625/50 (select at menu)			
Removable Storage Device	LTO-5 (File system: IBM LTF5)	LTO-6/LTO-5 (File system: IBM LTF5)	LTO-5 (File system: IBM LTF5)	LTO-6/LTO-5 (File system: IBM LTF5)
Supported MXF Format	OP-1a (SMPTe RDD-9) HD: MPEG-2 Long GOP - 50 Mbps (CBR/4:2:2/422P@HL) Audio: 24-bit, 8 ch - 35 Mbps (VBR/4:2:0/MP@HL) Audio: 16-bit, 4 ch - 25 Mbps (CBR/4:2:0/MP@H14) Audio: 16-bit, 4 ch - 18 Mbps (VBR/4:2:0/MP@HL) Audio: 16-bit, 4 ch SD MPEG-2 1GOP (I-frame only) - 50/40/30 Mbps (4:2:2/422P @ML) Audio: 16-bit, 8 ch		OP-1a HD - AVC-Intra 100 (10-bit, 4:2:2) Audio: 24-bit, 8 ch - AVC-Intra 50 (10-bit, 4:2:0) Audio: 24-bit, 8 ch - DVCPRO HD (8-bit, 4:2:2) Audio: 24-bit, 8 ch SD - DVCPRO50 (8-bit, 4:2:2) Audio: 24-bit, 8 ch - DVCPRO25 (8-bit, 4:1:1) Audio: 24-bit, 8 ch	
Video Input	HD-SDI: 1.5 Gbps or SD-SDI: 270 Mbps, 75Ω BNC x 1			
Genlock Input	HD: BB: NTSC: 0.429 Vp-p/PAL: 0.45 Vp-p or Tri-level sync: 0.6 Vp-p, 75Ω BNC x 1, loop-through (Terminate with 75Ω terminator, if unused) SD: BB: NTSC: 0.429 Vp-p/PAL: 0.45 Vp-p, 75Ω BNC x 1, loop-through (Terminate with 75Ω terminator, if unused)			
Video Output	HD-SDI: 1.5 Gbps, 75Ω BNC x 4 (Output 3 and 4 support timecode display), SD-SDI: 270 Mbps, 75Ω BNC x 4 (Output 3 and 4 support timecode display)			
Audio Input	The maximum number of output channels varies by MXF format and bitrate.			
Embedded	Max. 8 ch (4 stereo pairs) (Group 1 and 2) 48 kHz, synchronous only			
AES/EBU	HD: 1.0 Vp-p, unbalanced, 75Ω, BNC x 2 (2 stereo pairs), 48 kHz, SD: 1.0 Vp-p, unbalanced, 75Ω, BNC x 2 (2 stereo pairs), 48 kHz			
Audio Output	The maximum number of output channels varies by MXF format and bitrate.			
Embedded	Max. 8 ch (4 stereo pairs) (Group 1 and 2) 48 kHz, synchronous only			
AES/EBU	HD: 1.0 Vp-p, unbalanced, 75Ω, BNC x 2 (2 stereo pairs), 48 kHz, SD: 1.0 Vp-p, unbalanced, 75Ω, BNC x 2 (2 stereo pairs), 48 kHz			
Time Code Input	Embedded: Ancillary timecode, LTC: 1.0 Vp-p, unbalanced, 75Ω, BNC x 1			
Time Code Output	Embedded: Ancillary timecode, LTC: 1.0 Vp-p, unbalanced, 75Ω, BNC x 1		Embedded: Ancillary timecode, LTC: 1.5 Vp-p, unbalanced, 75Ω, BNC x 1	
Recording Time	Minimum / file: 1 second, Maximum / file: 24 hours			
Internal Storage	2 TB HDD		3 TB HDD	
Interfaces	RS-422: 9-pin D-sub (female) x 1 (inch screws) (for external VTR control on encoding) USB: USB 2.0 Series A connector x 3 (front x 1, rear x 2) (for keyboard and barcode scanner) LAN1/2: 100BASE-TX/1000BASE-T, RJ-45 x 2 To External Drive: Mini-SAS x 1 GPI/ALARM: 15-pin D-sub (female) x 1 - ALARM: Power, Fan alarm (relay contact) / GPI: 3-input/3-output (contact input, open collector output) MAINTENANCE: 15-pin mini D-sub (female) (VGA) x 1 (maintenance only)			
Temperature / Humidity	10°C to 40°C / 20% to 80% (no condensation)			
Power / Consumption	100 V AC to 240 V AC ±10%, 50/60 Hz			
	150 VA (145 W) at 100 V AC to 120 V AC, 132 VA (120 W) at 220 V AC to 240 V AC		210 VA (212 W) at 100 V AC to 120 V AC, 198 VA (182 W) at 220 V AC to 240 V AC	
Dimensions / Weight	212 (W) x 130 (H) x 533.5 (D) mm EIA 3 RU half size / 10 kg			
Consumables (if used 24 hours a day at room temperature)	Cooling fan: Replace every 3 years. Power: Replace every 5 years. Battery: Replace every 5 years. Hard disk drive: Replace every 5 years.			
Accessories	Operation manual, AC Cord (cable retaining clip included), Tutorial Manual, Control software (Installed), LTO cleaning cartridge			
Options	USB keyboard, USB barcode scanner, 1 year warranty, LTR Browser			

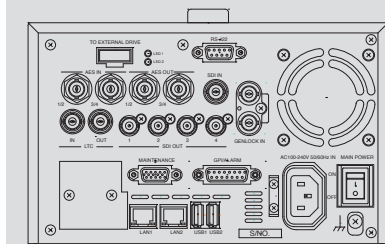
LTO Basic Performance

	LTO-5	LTO-6
Cartridge Size	105 (W) x 22 (H) x 102 (D) mm	
Capacity	Max. 1.5 TB (data area: 1425 GB / 1327 GiB)	Max. 2.5TB (data area: 2408GB / 2242GiB)
Recording capacity		
LTR-100HS MPEG-2 50Mbps MXF	Max. 52 hours	Max. 80 hours
LTR-120HS AVC-Intra 100 MXF	Max. 25 hours	Max. 40 hours
	These recording capacities are the theoretical value excepted of ancillary data and proxy files. These might decrease depending on the condition of tape head and tape.	
Response	File body seek time: within three minutes	

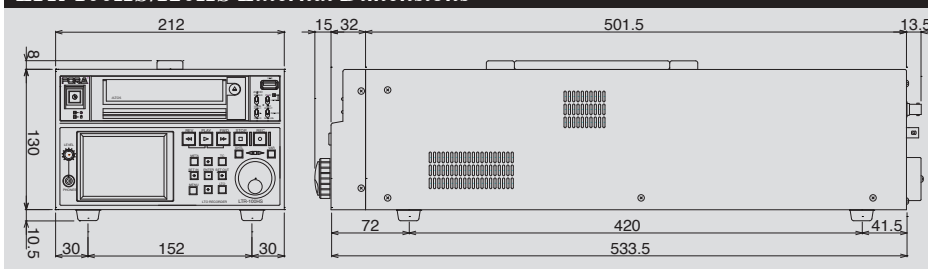
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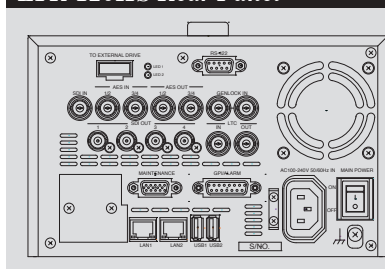
LTR-100HS Rear Panel



LTR-100HS/120HS External Dimensions



LTR-120HS Rear Panel



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