FOR.A
INNOVATIONS IN VIDEO
and AUDIO TECHNOLOGY

LTO-5 Video Archiving Recorder

LTR-100HS/120HS

Re-defining Media Archive Workflows

The LTR Series is a standalone video archiving recorder fitted with an LTO-5 (Linear Tape Open) drive. Capable of recording up to 1.5 TB of LTFS 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-5 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-5*1 technology

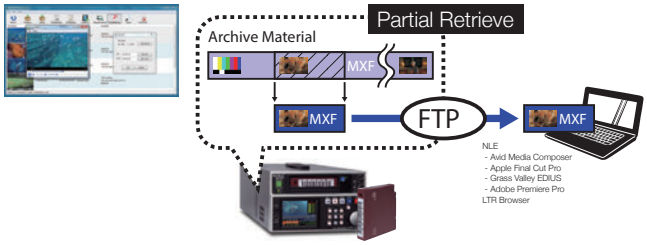
- The media has massive storage capacity (Max. 1.5 TB) yet is compact, helping to save space
- One unit supports 50+ hours of recording
- Open-standards-based, highly versatile, excellent storage stability
- Secure and low-cost media; perfect as a material exchange media

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 LTFS*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 and 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

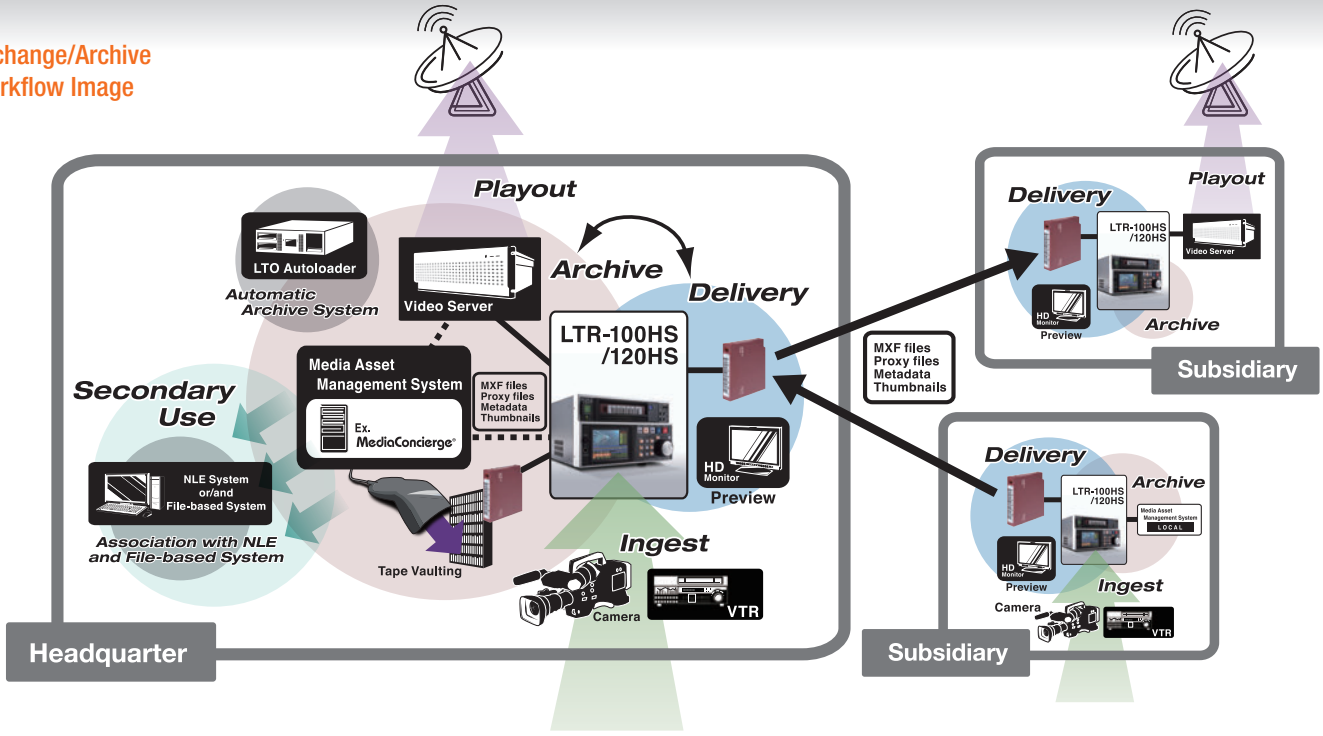
Emphasis on video quality and secure content

- Thought given to forward compatibility of video material by adopting open technologies such as MXF OP-1a, LTO, and LTFS.
- Includes broadcast quality video codec; high-quality video recording (LTR-100HS: MPEG-2, LTR-120HS: AVC-Intra/DVCPRO)
- 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

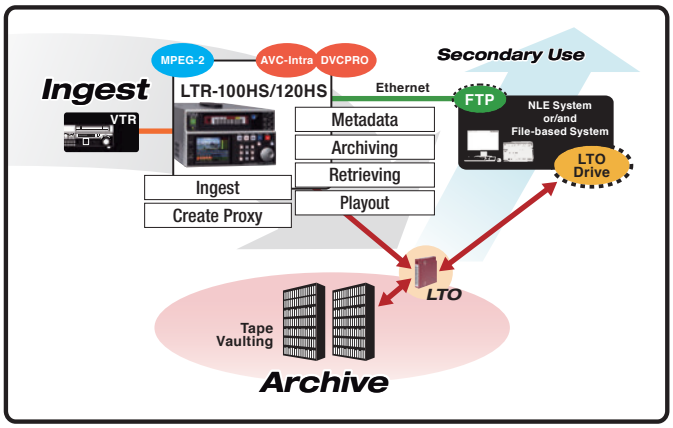
- RS-422: External VTR control
- Gigabit Ethernet: File input/output
- USB 2.0: Bar code reader, keyboard connection
- Remote API: Application programming interface (API) for remote control operation from another system or software via LAN. (For further details, contact FOR-A Company Ltd.)

Exchange/Archive Workflow Image

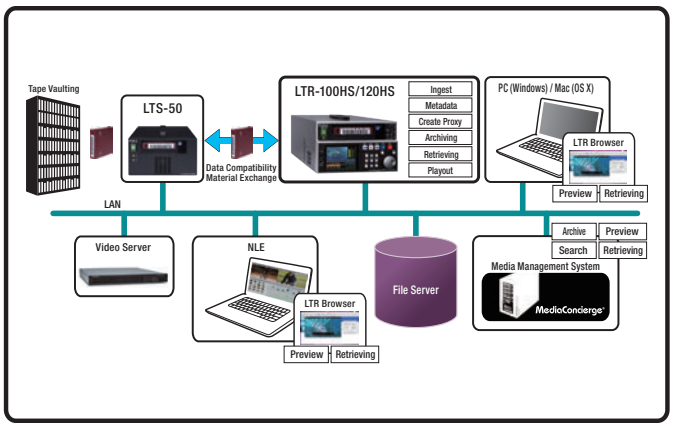


Application Examples

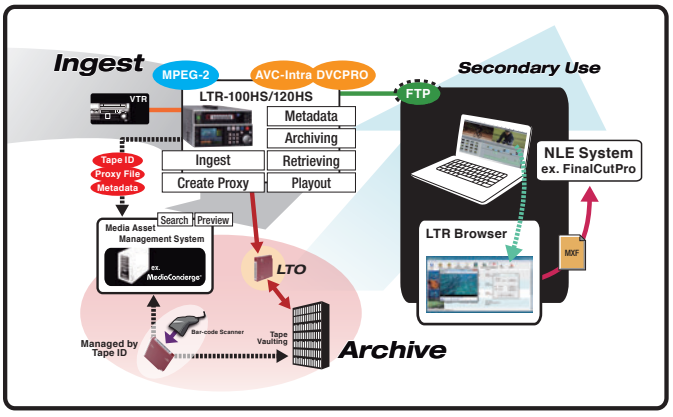
Simple Archive/Long Time Recording



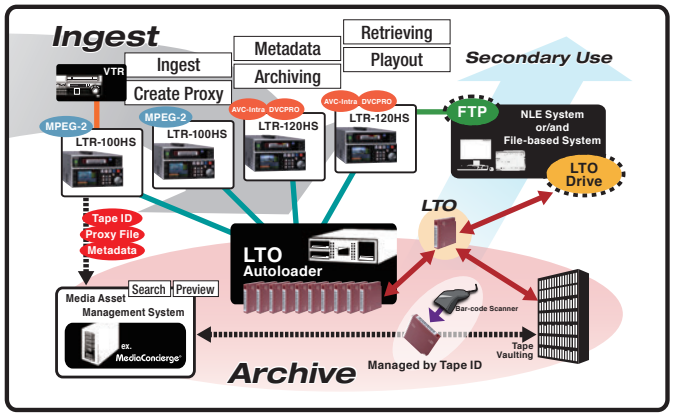
Offers data compatibility with LTS-50 and video material support



NLE System (Partial Retrieve)



Association with Cart System (Middle/Big Archive)



*1: What is LTO-5?
Initialism of Linear Tape Open Standard for magnetic tape storage devices co-developed by IBM, Hewlett-Packard and Seagate Technology.

*2: What is LTFS?
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-120HS
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 LTFS)	
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 Embedded AES/EBU	The maximum number of output channels varies by MXF format and bitrate. Max. 8 ch (4 stereo pairs) (Group 1 and 2) 48 kHz, synchronous only 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 Embedded AES/EBU	The maximum number of output channels varies by MXF format and bitrate. Max. 8 ch (4 stereo pairs) (Group 1 and 2) 48 kHz, synchronous only 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	
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 (for External drive. Optional software is necessary. This is planned in the future.) 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	10ºC to 40ºC / 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-5 Basic Performance

Cartridge Size	105 (W) x 22 (H) x 102 (D) mm	
Capacity	Max. 1.5 TB (data area: 1425 GB / 1327 GiB)	
Recording capacity (Theoretical value)	<LTR-100HS> MPEG-2 422P@HL: Max. 52 hours (50 Mbps, HD) MPEG-2 MP@HL: Max. 82 hours (35 Mbps, HD) MPEG-2 422P@ML: Max. 50 hours (50 Mbps, SD) (without ancillary data other than timecode)	<LTR-120HS> AVC-Intra 100 (HD): Max. 25 hours AVC-Intra 50 (HD): Max. 47.5 hours (w/o proxy files) DVCPRO (SD): Max. 50 hours (w/o proxy files) (without ancillary data other than timecode)
Response	File system information acquisition time: under one minute in typical case File body seek time: within three minutes	

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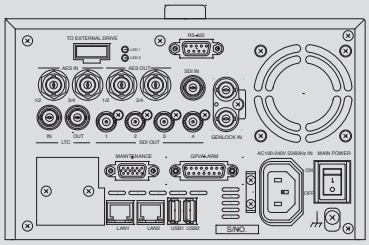
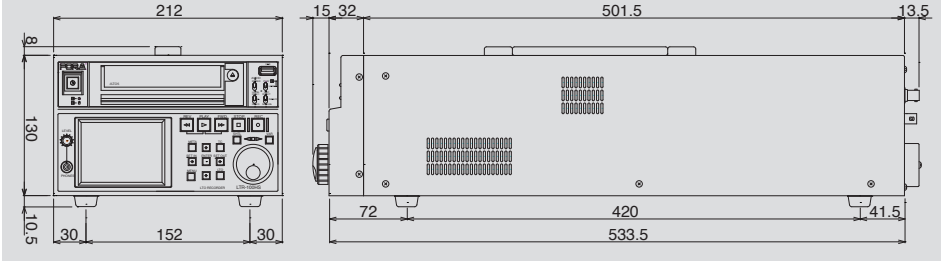
MediaConcierge is a trademark of FOR-A Company Limited.

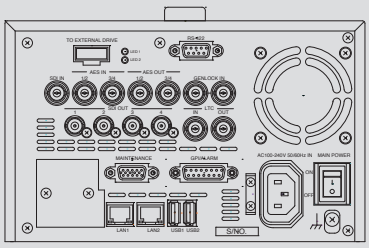
LTR-100HS Rear Panel



LTR-100HS/120HS External Dimensions



LTR-120HS Rear Panel



FOR-A COMPANY LIMITED

URL: http://www.for-a.com/

Head Office: 3-8-1 Ebisu, Shibuya-ku, Tokyo 150-0013, Japan	Tel : +81 (0)3-3446-3936	Fax : +81 (0)3-3446-1470
FOR-A Corporation of America: 11155 Knott Ave., Suite G&H, Cypress, CA 90630, U.S.A.	Tel: +1-714-894-3311	Fax: +1-714-894-5399
FOR-A Corporation of America East Coast Office: 2 Executive Drive, Suite 670, Fort Lee Executive Park, Fort Lee NJ 07024, U.S.A.	Tel: +1-201-944-1120	Fax: +1-201-944-1132
FOR-A Corporation of America Distribution & Service Center: 2400 N.E. Waldo Road, Gainesville, FL 32609, U.S.A.	Tel: +1-352-371-1505	Fax: +1-352-378-5320
FOR-A Corporation of America Miami Office: 5200 Blue Lagoon Drive, Suite 760, Miami, FL 33126, U.S.A.	Tel: +1-305-931-1700	Fax: +1-305-264-7890
FOR-A Corporation of Canada: 346A Queen Street West, Toronto, Ontario M5V 2A2, CANADA	Tel: +1-416-977-0343	Fax: +1-416-977-0657
FOR-A UK Limited: Unit C71, Barwell Business Park, Leatherhead Road, Chessington Surrey, KT9 2NY, UK	Tel: +44 (0)20-8391-7979	Fax: +44 (0)20-8391-7978
FOR-A Italia S.r.l.: Via Volturno, 37, 20047, Brugherio MB, Italy	Tel: +39-039-881-086/103	Fax: +39-039-878-140
FOR-A Corporation of Korea: 1007, 57-5,Yangsan-ro,Yeongdeungpo-gu, Seoul 150-103, Korea	Tel: +82 (0)2-2637-0761	Fax: +82 (0)2-2637-0760
FOR-A China Limited: 708B Huateng Building, No. 302, 3 District, Jinsong, Chaoyang, Beijing 100021, China	Tel: +86 (0)10-8721-6023	Fax: +86 (0)10-8721-6033
FOR-A Middle East-Africa Office: Jebel Ali Free Zone, LOB-16, Office 619, P.O. Box 261914, Dubai, U.A.E.	Tel: +971 4 887 6712	Fax: +971 4 887 6713

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