



ARRISCAN **XT**

POWERED BY
ALEXA IMAGING TECHNOLOGY



ARRISCAN XT PRESERVING AND RESTORING CINEMATIC HISTORY

Hundreds of archives around the world contain reels of film, some more than a century old, that lie deteriorating. ARRI's state-of-the-art film scanner, the ARRISCAN XT, can play a key role in preserving those films for future generations.

The ARRISCAN XT builds on the achievements of the ARRISCAN and ARRILASER, which have set postproduction standards since the emergence of DI (digital intermediate) workflows. In cooperation with film archives and restoration specialists worldwide, ARRI has optimized these cutting-edge technologies for digitizing and remastering old and fragile film materials.

ARRI's ALEXA XT sensor, which has been used in ALEXA cameras to capture countless award-winning movies and TV series, allows the ARRISCAN XT to scan archive film in the highest possible image quality. Badly damaged material can be worked on safely with the computerized film transport system.

The diffuse, high-power LED illumination of the ARRISCAN XT reduces the visibility of scratches and does not produce any heat at all—essential when working with highly flammable nitrate film stock. The optional Wet Gate system uses a specially developed liquid to conceal scratches and dust.

Developed by Zeiss in cooperation with ARRI, the ARRISCAN XT's optics and variable optical magnification system make sharpness-reducing digital resizing of scans unnecessary, even when scanning unusual frame dimensions or shrunken film material.

The ARRISCAN XT takes tried-and-tested film restoration technology to a new level of excellence. It is fully compatible with existing ARRISCANs, so facilities can simply upgrade their scanners to XT specifications with new hardware, software, and features.

ARRISCAN XT advantages

- Best image quality for high-density archive film scanning
- Unsurpassed dynamic range, sensitivity, and color science
- Faster scanning speed in comparison to ARRISCAN Classic
- Full compatibility with all film gates
- Manually triggered single-step frame-by-frame scanning



EXTENDED PERFORMANCE

The ALEXA XT dual gain CMOS sensor guarantees the best image quality for high-density archive film scanning. Its enhanced sensitivity, improved signal-to-noise ratio, and extended dynamic range produce distortion-free scans regardless of the film's condition and help capture more detail from every frame. This is vitally important when dealing with historical film, as restorers may not get a second chance to preserve an image.

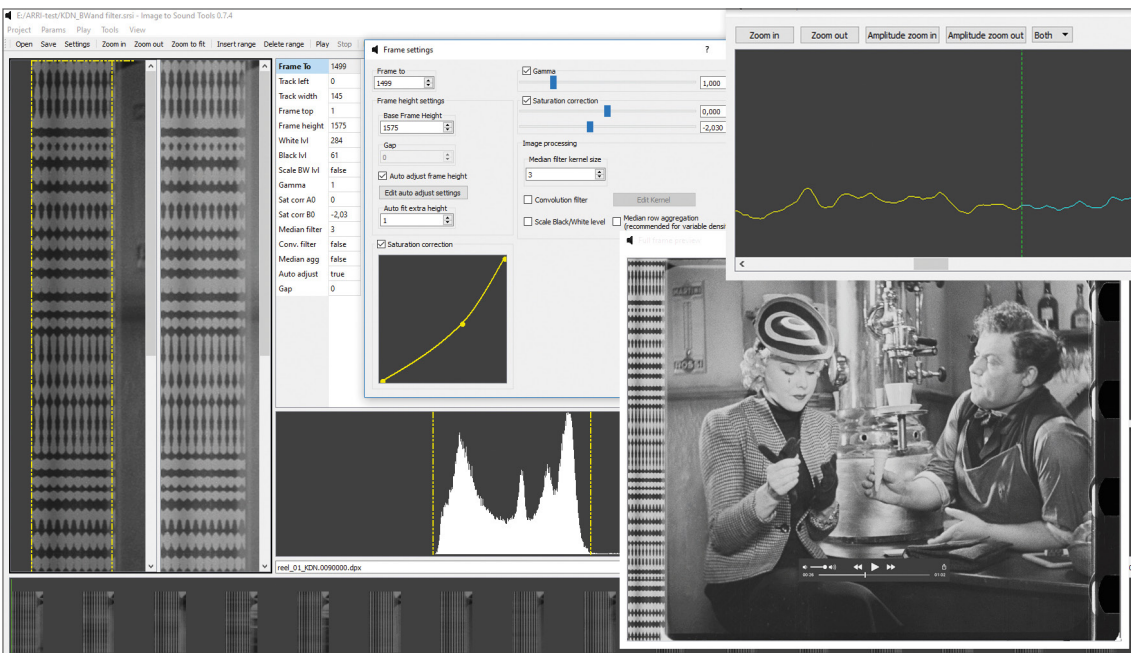
Repairs to scratches and dust on color film have been improved through hardware modifications and new software applied to the IR channel of the ARRISCAN XT.

The ARRISCAN XT's scanning speed is around 65% faster than its predecessor, and severely damaged film can be scanned with ease, as can non-standard film formats with unusually tall frame sizes.

OPTICAL SOUND DIGITIZATION

Image to Sound Tools (ITST) is a unique system that permits the ARRISCAN XT to decode and digitize the optical soundtracks on films. The package of specialized software extracts the soundtrack and converts it into digital audio. Scanning parameters are usually selected for the image properties, so the system is equipped with a suite of tools that improves sound quality from scans.

The system's biggest advantage is its ability to play back audio directly from image files in real time. The audio playback, or looped playback, allows restorers to quickly set the optimum performance parameters for digitization, even when a soundtrack is damaged.



TECHNICAL SPECIFICATIONS

Film formats 35 mm / 16 mm	Custom resolutions and optical magnifications covering all standard aperture sizes and aspect ratios including: <ul style="list-style-type: none"> • S35 aperture 2perf, 3perf and 4perf • N35 (academy) aperture 2perf, 3perf and 4perf • S16 / N16
Film gates and aperture dimensions	<ul style="list-style-type: none"> • 35 mm Archive Gate pin, aperture: 28.0 mm x 21.5 mm • 35 mm Wet Gate pinless, aperture: 34.5 mm x 21.9 mm • 16 mm Archive Gate pin, aperture: 14.2 mm x 9.1 mm • 16 mm Wet Gate pin, aperture: 13.2 mm x 10.0 mm
Imaging device	Custom ARRI designed ALEXA XT dual gain CMOS area sensor with multichannel readout. Monochrome sensor with IR masking. <ul style="list-style-type: none"> • Highspeed microscan system for sensor positioning • 3K (3072 x 2160) native sensor resolution • 6K (6144 x 4320) native resolution using microscanning
Dynamic range	<ul style="list-style-type: none"> • Dual gain AXT HDR mode: up to 4.0 logarithmic densities
Bit depth	<ul style="list-style-type: none"> • True 16-bit image processing using dual gain AXT HDR mode • True 16-bit linear file output (per color channel)
Output resolutions	<ul style="list-style-type: none"> • 3K native 2730 x 2074 • 6K native 5460 x 4148 using microscanning • 2K 2048 x 1556 downsampled from 3K or 6K • 4K 4096 x 3112 downsampled from 6K • Variable customizable resolutions from HD up to 6K
Optical system	<ul style="list-style-type: none"> • High-precision Zeiss optics custom designed for ARRISCAN with IR focus compensation, 105 mm focal length • Adaptor lens for 16 mm • Autofocus system and variable optical magnification
Illumination	<ul style="list-style-type: none"> • High-power LEDs (R, G, B, IR), temperature-controlled • Integration sphere providing diffuse and indirect lighting for scratch reduction and uniform illumination of the gate aperture • Infrared for dust & scratch removal through IR-Cleaner license
Film transport	<ul style="list-style-type: none"> • Fully computerized intermittent frame-by-frame film transport • Adjustable parameters for speed, ramping, film tension and pinless scanning • Sprocket motors for primary film transport and frame positioning • Sprocketless film transport for 35 mm, electronically position-controlled (option) • Two film platters, electronically position controlled • Two supporting film plates to ensure warped or shrunken reels stay wound correctly onto film core and flat against winding platter • Two Particle Transfer Rollers (PTR)
Film registration	<ul style="list-style-type: none"> • Mechanical pin registration, electronically position-controlled • Optical registration and image stabilization • Pinless scanning, electronically position-controlled
Scanning speed	<ul style="list-style-type: none"> • 7.0 fps @ 3K, 2K resolution, AXT RGB HDR mode * • 2.2 fps @ 6K, 4K resolution, AXT RGB HDR mode * • 10.0 fps @ 3K, 2K resolution, AXT monochrome HDR mode * • 5.0 fps @ 6K, 4K resolution, AXT monochrome HDR mode * • Manually triggered frame-by-frame single-step film transport
Shuttle speed	<ul style="list-style-type: none"> • 35 mm: variable, 0.3 m/s up to 2 m/s, automatic End-of-Reel detection • 16 mm: variable, 0.3 m/s up to 1 m/s, automatic End-of-Reel detection • Archive mode: Infinitely adjustable from 0.01 m/s up to 0.3 m/s
Shrinkage	<ul style="list-style-type: none"> • Pin registration – Sprocket Mode: up to 0.4% • Pinless – Sprocket Mode: from 0.4% to 3.5% • Pinless – Sprocketless Mode: > 3.5%
Downsample filters	<ul style="list-style-type: none"> • Optimized filter algorithm for print film, intermediate and camera negative film • User-adjustable from crisp to soft (independent for RGB)
File formats	<ul style="list-style-type: none"> • TIFF 16-bit / DPX 16-bit / DPX 12-bit / DPX 10-bit / Cineon 10-bit • Mono channel Black & White DPX and TIFF files • TIFF 8-bit (proxies only)
File output standards	<ul style="list-style-type: none"> • Raw linear sensor output • Logarithmic conversion for negative film, parameterized for color gains and base offset (Kodak Cineon Standard) • Rec709 / Rec2020 print film conversion LUTS • Custom conversion output LUTs
Color calibration	<ul style="list-style-type: none"> • Status M density, printing density, custom matrix • ARRISCAN XT print and reversal film scanning mode
Proxies	<ul style="list-style-type: none"> • Independent proxy file output with variable file formats, variable pixel aspect ratios and resolutions, variable frame positioning and magnification, cropping and padding
Keycode reader	<ul style="list-style-type: none"> • Enables display and storage of KC from 16 mm and 35 mm film, scanning from KC lists, automated film calibration selection and splice detection
Analysis tools	<ul style="list-style-type: none"> • Full resolution preview scan area (switchable RAW sensor signal and output file including geometry and conversion settings) • Live Scopes: Waveform and histogram, X/Y-line profiles, pixel prober, tonal curve and gain editor • Live scan preview • Live stabilization histogram
Quality control	<ul style="list-style-type: none"> • Fast and precise machine and film calibration routines • Geometry calibration using custom etched-high precision glass plate • ARRI Quality Analysis (AQUAmat) software for system quality check

Workflow	<ul style="list-style-type: none"> • GUI and script-based job management • Customizable EDL importer • Keycode based scanning • Full reel scanning • Automatic film calibration selection • GUI and script-based job management • Calibration tools • ALE / FLEX exporter • SQL database and XML import / export functions
User interface control	<ul style="list-style-type: none"> • Multiple GUIs on local touchscreen and external PCs via standard network connection • Interactive job editor • Fast and automatic grey balance and base calibration • Archive GUI for safe and gentle film transport, disabling the pin etc. • Touchpanel: Convenient scanner control directly at the machine. 1024x768 resolution touch screen for display of GUI from host computer • Post jobscripts
Archive software features	<ul style="list-style-type: none"> • Manually triggered frame-by-frame scanning • Live preview in shuttle mode • Pinless scanning modes with all ARRISCAN gates • Variable winding speed • Slower transport acceleration speed • Reduction of film tension • Soft transport step speeds from 200ms to 2s, adjustable on the fly • Fixed scanning speed for wetgate operation • Framing correction during job execution
Optical image registration	<ul style="list-style-type: none"> • Built-in optical image stabilization based on perforation position • Stabilization live histogram to visually control the correction process
Optical sound decoding system (option)	<ul style="list-style-type: none"> • Stand-alone Optical Sound Decoding System for 16 mm and 35 mm variable area and variable density sound tracks • ARRI certified Hardware & Software (PC, Audio Mixer, Audio Monitors etc.) • Real-time off-line processing and real-time audio playback from image files with on-the-fly parameter adjustment and WAV file export
Infrared-cleaner (option)	<ul style="list-style-type: none"> • Software license providing an improved RAW IR-Channel • Linux based ARRI version from HS-Art DustBuster+ running on Host PC • Command-line interface for automated post-scan dust & scratch repair
Sprocketless transport (option)	<ul style="list-style-type: none"> • Scanning of non-standard and severely damaged film material • Rubber replacement for transport sprockets and loopbuilders to accommodate repaired and badly spliced film
Wet Gate System (option)	<ul style="list-style-type: none"> • Includes Wet Gate Tower for liquid handling and regulation of compressed air and vacuum • Modification kit for ARRISCAN to mount wet gates • Pinless 35 mm and 16 mm pin-registered wet gate • Additional wet gate drying unit
Networking & file transfer	<ul style="list-style-type: none"> • Direct connection to SAN via FC (StorNext, CXFS) • 4-port 1 GBase-T NIC onboard • 2-port 10 GBase-T NIC with Intel® X550 controller • 2-port 16 Gbit Fibre Channel (option) • 2-port Fibre Ethernet (option) • Direct support of ftp protocol BrightClip enabled
Host PC	<ul style="list-style-type: none"> • Integrated industrial grade Linux workstation • Operating system: CentOS-7 • 2x USB-3 • NVIDIA Quattro P4000 graphics card • 24 TB (3x 8TB) SATAIII internal Raid
Remote PC OS	<ul style="list-style-type: none"> • Windows 10 Professional
Physical dimensions	<ul style="list-style-type: none"> • Size: 120 x 70 x 180 cm (L x W x H) • Weight: approx. 370 kg
Operating environment	<ul style="list-style-type: none"> • Air-conditioned and dust free • Minimum size: 3m x 3m
Room requirements	<ul style="list-style-type: none"> • Constant temperature 17 - 23 °Celsius (fluctuation +/- 1°) • 45% to 55% rel. humidity
Electrical requirements	<ul style="list-style-type: none"> • Input voltage: 110V - 240V switchable • Frequency: 50Hz/60Hz switchable
Power consumption	<ul style="list-style-type: none"> • Power input: 850 Watt at 230V

* Pin-registered with standard film transport setup



PRECISION CONTROL

The film transport system designed and built by ARRI for the ARRISCAN XT guarantees maximum image steadiness and ensures film safety.

Even extremely badly damaged material can be processed with the fully computerized intermittent frame-by-frame transport. An exchangeable film gate makes it easy to change from 35 mm to 16 mm. It's also simple to switch to Wet Gate, or to Sprocketless Transport.

FUTURE-PROOF TECHNOLOGY

The ARRISCAN XT advances ARRI's well-established scanning technology and doesn't require any of the ARRISCANs already in operation around the world to be replaced.

Instead, they can be upgraded to ARRISCAN XT by fitting new hardware, such as the ALEXA camera head and the Wet Gate, and installing new software. This can all be done on-site.

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